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MEMORANDUM FOR ALL RESEARCH AND ENGINEERING DIRECTORATE PERSONNEL

SUBJECT: Distribution of Approved Defense Health Agency Strategic Research Plan for DoD Working Dog

This memorandum signifies my approval of the Defense Health Agency (DHA) Strategic Research Plan (SRP) for DoD Working Dog (Attachment). The DHA manages the Defense Health Program (DHP) medical research, development, test, and evaluation (RDT&E) appropriation. The DHA Research and Engineering (R&E) Directorate provides oversight and management of the DHP Science and Technology (S&T) annual budget to support research across critical investment areas.

The DHA Deputy Assistant Director (DAD), R&E will utilize SRPs to inform DHP S&T investments. SRPs outline the requirements deemed high priority based on assessments of current and future medical and operational needs and existing research gaps of the military medical community. Adherence to SRPs will ensure the Program Objective Memorandum and spend plans are aligned to prioritized Joint and Service requirements.

My point of contact for the DHA SRPs is Dr. Emma Gregory, Branch Chief, Science & Technology Portfolio Management (<u>dha.ncr.j-9.mbx.stmp@health.mil)</u>. Thank you for your continued support.

Sean Biggerstaff, Ph.D. Deputy Director Research and Engineering (R&E)

Attachments: As stated

cc: Surgeon General of the Army Surgeon General of the Navy Surgeon General of the Air Force President, Uniformed Services University of the Health Sciences

June 2024

Defense Health Agency Strategic Research Plan: Department of Defense (DoD) Working Dog



REVISION HISTORY

Revision	Entered by	Reason	Date

CONTENTS

Re	visior	n History	ii
Fig	gures.		iv
Ta	bles		iv
1.	Over	rview and Organization	1–1
2.	Capa	ability Requirements and Associated S&T Paths	2–1
	2.1	Optimize Training and Occupational Tasks for Health and Performance in DWDs (D1)	2–2
	2.2	Enhance DWD Well-Being and Performance (D2)	2–3
	2.3	Effectively Recognize, Prevent, and Treat Pain in DWDs (D3)	2–4
	2.4	Optimal Treatments and Protocols for Injuries and Return-to-Duty Plans for DWDs (D4)	2–5
	2.5	Identify and Characterize Risk Factors for MSKIs in DWDs (D5)	2–6
3.	Refe	prences	3–1
Ap	pendi	ix A. Key Definitions	.A–1
Ap	pendi	ix B. Acronyms	.B–1

FIGURES

<u>Pa</u>	<u>ige</u>
Figure 1-0 SRP Hierarchy 1	-2
Figure 2-0 Capability Requirement Graphic Example 2	-1
Figure 2-1 Optimize Training and Occupational Tasks of DWDs	-2
Figure 2-2 Enhance DWD Well-Being and Performance	-3
Figure 2-3 Effectively Recognize, Prevent, and Treat Pain in DWDs	.–4
Figure 2-4 Optimal Treatments and Protocols for Injuries and Return-to-Duty Plans for DWDs	 2—5
Figure 2-5 Identify and Characterize Risk Factors for MSKIs in DWDs	-6

TABLES

Page Table 1-0 Capability Requirements Included in DoD Working Dog SRP 1–3

1. OVERVIEW AND ORGANIZATION

The Defense Health Agency (DHA) Research and Engineering (R&E) Directorate leads the discovery of innovative medical solutions responsive to the needs of Combatant Commands, the Military Services, and the Military Health System (MHS). DHA R&E provides oversight and management of a Science and Technology (S&T) annual budget of approximately \$500 to \$800 million to support research across critical investment areas. The cornerstones of the DHA S&T management approach are as follows:

- Portfolio Managers directly accountable for the health and performance of their research Portfolios
- Alignment of research investments to validated and prioritized joint Capability Requirements
- Identification of the Capabilities needed to work toward fulfilling priority Capability Requirements
- S&T (Budget Activity [BA] 6.1, 6.2, and 6.3) efforts that focus on areas where Defense Health Program (DHP) investments can make the most impact and accelerate delivery of knowledge and materiel products to end users
- Informing multi-year research investment plans that allow adaptation to emerging (or declining) requirements

The DHA Deputy Assistant Director (DAD) for R&E employs Strategic Research Plans (SRPs) to inform and describe how Department of Defense (DoD) medical capabilities will be developed over time. These SRPs will drive investment recommendations for Future Years Defense Program (FYDP) plans and serve as a critical tool for aligning investments with military medical health priorities. SRPs include information that will enable the Portfolio Manager to perform the following activities:

- Develop, on an annual basis, the FYDP plans in alignment with Capability Requirements and anticipate the resources that will be required for the respective Program Objective Memorandum (POM) cycle
- Provide the oversight and concurrence of Year of Execution (YOE) spend plans that Program Managers (PMs) will be responsible for developing as a recommendation to the Portfolio Manager
- Facilitate discussion with leadership and stakeholders regarding the research activities required to address Capability Requirements

SRPs are organized into four levels:

- Capability Areas (CAs) reflect the highest structural elements that encompass broad areas of medical research within an SRP
- **Capability Requirements** (CRs) are derived from key source documents [e.g., Joint Capabilities Integration and Development System (JCIDS)] and outline Capabilities (knowledge or materiel) required to meet current or future military medical needs
- Science and Technology Paths (STPs) describe the high-level research activities needed to support the transition of Capabilities to product development or other end users

• **Capabilities** describe the S&T knowledge and/or materiel products to be transitioned to product development or end users

Figure 1-0 shows the hierarchical relationship between the components of the SRP, with the associated reference schema.



Figure 1-0 SRP Hierarchy

The definition of a DoD Working Dog (DWD) is any canine that meets DoD Component requirements to support operations in the protection of installations, resources, and personnel, to include explosive and illegal narcotic detection abilities, patrol, tracking, or other requirements prescribed by the DoD Component [1]. The scope of this DWD SRP includes CRs related to preparing, procuring, employing, evaluating, maintaining, and managing DWDs to enable the effective execution of the full spectrum of global DWD mission sets. This SRP only outlines the CRs deemed as priorities. These priorities have been identified based on assessment of the current and future medical and operational needs and/or existing research gaps of the military medical community. Inclusion of a CR in the SRP does not guarantee that funding will be aligned to its respective STPs.

The priority DWD CRs in this SRP are organized into the following CAs:

- Optimize and Enhance: Breed, select and procure, prepare, and equip DWDs for optimized operational performance
- Treat and Rehabilitate: Develop treatments, therapies, and rehabilitation strategies for DWDs that optimize return-to-duty status
- Maintain, Manage, and Support: Oversee and provide support to DWDs across entire service life

Priority DWD CRs are listed in Table 1-0, with each CR noted via a D and a number (e.g., D1, D2). These CRs are derived from the Initial Capabilities Document (ICD) for Joint Research Needs

of the Department of Defense (DoD) Working Dog (DWD) Enterprise [1] and subject matter experts (SMEs) in the DWD field. Section 2 describes the STPs leading to defined Capabilities for each CR. The numeric labeling schema is not meant to represent relative priority and is only intended to organize the CRs for ease of use.

D No.	Capability Requirement Name	Capability Requirement Description
D1	Optimize Training and Occupational Tasks for Health and Performance in DWDs	Identify health, and performance characteristics of DWD breeds to optimize training and occupational tasks.
D2	Enhance DWD Well-Being and Performance	Develop solutions that enhance the well-being and performance of DWDs through detecting, evaluating, predicting, and treating behavioral problems impacted by genetics, occupation, and kenneling.
D3	Effectively Recognize, Prevent, and Treat Pain in DWDs	Develop solutions to effectively recognize, prevent, and treat pain in DWDs, including acute and chronic pain, field analgesia, and sedation/anesthesia and their associated effects.
D4	Optimal Treatments and Protocols for Injuries and Return-to-Duty Plans for DWDs	Identify and characterize optimal treatments, protocols, and devices for DWD occupational hazards and injuries, including return-to-duty plans.
D5	Identify and Characterize Risk Factors for Musculoskeletal Injuries (MSKIs) in DWDs	Identify and characterize occupational risk factors for MSKI and probability of MSKI occurrence based on breed, genetics, or body conformation.

Table 1-0 Capability Requirements Included in the DWD SRP

2. CAPABILITY REQUIREMENTS AND ASSOCIATED S&T PATHS

This section outlines the DWD priority CRs, STPs and Capabilities. The Capabilities described are expected to transition to product development or other end users (e.g., members of the clinical or operational community) to aid in fulfillment of the requirement when they reach the appropriate Technology Readiness Levels/Knowledge Readiness Levels (TRL/KRL). Product development will then perform, as appropriate, additional development activities required to mature these Capabilities to the extent to which they can be delivered for full clinical or operational use by the intended end user. Any specific examples listed within the Capability description are intended only as examples and not as main/top priorities of that Capability. Each CR in this section to follow is depicted as a figure in the format shown in Figure 2-0.



Figure 2-0 Capability Requirement Graphic Example

2.1 Optimize Training and Occupational Tasks for Health and Performance in DWDs (D1)

DWDs must achieve and maintain optimized operational performance to be effective in their role. The identification and characterization of factors and conditions that positively or negatively affect the DWD are required to understand optimal performance (D1.1). Building on this knowledge, the development of evidence-based methods for performance enhancement and optimization are required to develop assessment guidelines and screenings to effectively determine performance limitations (e.g., work/rest cycles, breed characterizations) (D1.2). This knowledge will also be used to develop guidelines, proper training, and care guidelines to maintain the operational performance of the DWD (D1.3) [1].

Optimize and Enhance		
Optimize Training	S&T Paths	Capabilities
D1.1 D1.2 D1.3 D1.1a - D1.3b (6 total)	D1.1 - Characterize desired health, wellness, and performance in DWDs	 D1.1a - Assessments that identify desirable health and performance characteristics for DWDs D1.1b - Measurable health and performance metrics for DWDs
	D1.2 - Develop products to assess and screen for wellness in DWDs	 D1.2a - Assessments, benchmarks, and/or tools to inform optimal performance of DWDs D1.2b - Assessment/Screening for physiological and genetic factors of desired performance characteristics in DWDs
	 D1.3 - Develop guidelines for training and care of DWDs 	 D1.3a - Guidelines for housing/hoteling and facility management practices of DWDs to ensure continued wellness and mission readiness which follow Animal Welfare Act requirements D1.3b - Knowledge informing training choices for DWDs

Figure 2-1 Optimize Training and Occupational Tasks of DWDs

2.2 Enhance DWD Well-Being and Performance (D2)

Behavioral health is critical to the DWDs ability to perform their role effectively. Enhancing the well-being of the DWD by the detection, evaluation, prediction, and treatment of behavior problems in the DWD is critical for optimized performance and duty readiness (D2.1, D2.4). Determining the effects of kennel design, management practices, and environmental stimuli/exposures on the DWD's well-being and performance of the DWD (D2.2 – D2.3) are critical in the development of guidelines for the treatment and mitigation of unwanted or abnormal behaviors (D2.5) [1].

Optimize and	S&T Paths	Capabilities
Enhance DWD Well-Being and Performance (D2)	 D2.1 - Develop knowledge and assessments for DWD behaviors encompassing normal, abnormal, – desired, and undesired observations 	 D2.1a - Ethogram of DWD behavior in the kennel, to determine baseline behavior, assess welfare, and evaluate behavioral manifestations of stress, discomfort, or pain, without human presence confounding D2.1b - Environmental effects assessments for DWD behavior and mission readiness (e.g., to include hoteling, kenneling, noise, temperature, management practices and handler interactions in active duty and rest). D2.1c - Off-duty DWD behavior assessment tools for early detection of welfare indicators, medical issues, or behavioral concerns, with potential to forecast work-behavior and readiness D2.1d - Genetic factors that influence DWD behavior
D2.3 D2.4 D2.5	D2.2 - Develop guidelines for kenneling, handling, and care to mitigate environment-specific – behaviors or conditions in the DWD	 D2.2a - Best practices or guidelines for proper kennel design for DWDs to prioritize health, desirable behavior, and compliance with the Animal Welfare Act D2.2b - Best practices and materiel products to mitigate environmental exposures in DWDs while off duty or convalescence D2.2c - Best practices for kenneling protocols to mitigate medical conditions and behaviors of DWDs in deployed and non-deployed scenarios
	D2.3 – Develop guidelines to improve interaction- based outcomes with DWDs	D2.3a - Assessments on handler, veterinary staff, and caregiver-dog interactions with respect to behavior and training performance
D2.1a - D2.5c (13 Total)	D2.4 - Develop DWD screenings for stress, and concerns across the behavioral spectrum	 D2.4a - Standardized screenings of DWDs for identification of inappropriate, abnormal, or undesirable behaviors (including stress), to support veterinary visits, pre- and post- TDY/deployment, or post-incident exams D2.4b - Screenings and/or assessments of DWDs, that a handler can complete, with the intent to capture any contributing factors when behavioral health problems are observed
	D2.5 - Develop guidelines, treatments, and mitigations for unwanted or abnormal behaviors – in DWDs	 D2.5a - Guidelines outlining behavioral treatment plans for DWDs, including alternative interventions, and enrichment programs, while incorporating feedback from screenings D2.5b - Knowledge of best practices/guidelines for behavioral treatment of DWDs after an environmental exposure D2.5c - Guidelines and knowledge on behavioral return-to-work treatment plans or disposition for DWDs

Figure 2-2 Enhance DWD Well-Being and Performance

2.3 Effectively Recognize, Prevent, and Treat Pain in DWDs (D3)

The development of knowledge and/or materiel products to effectively recognize, prevent, and treat pain in DWDs will aid in the readiness of the DWD and handler team. This includes determinations of acute and chronic pain, field analgesia, and sedation/anesthesia and their associated effects on the ability of the DWD to perform their duties and the development of return-to-duty guidelines (D3.1 - D3.3) [1].

Treat and Rehabilitate	S&T Paths	Capabilities
Effectively Recognize, Prevent, and Treat Pain in DWDs (D3)	D3.1 - Identify pain products for prevention and treatment in DWDs	 D3.1a - Functional assessments of pain to inform DWD fitness for duty standards D3.1b - Products, and screenings to objectively assess and monitor pain, with or without handler involvement, in DWDs D3.1c - Materiel products to improve the delivery of pain control therapies in DWDs
D3.1 D3.2	D3.2 - Characterize the use of commonly available sedation or anesthesia products for routine care in DWDs	D3.2a - Assessments to determine how the use of anesthesia affects behavior, health, and readiness in DWDs
D3.3 D3.1a – D3.3c (7 Total)	D3.3 - Evaluate commonly used pain products and sedation/anesthesia on performance (olfaction, cognitive, physical) in DWDs	 D3.3a - Assessments and screenings on the effects of common pain management therapies on behavior and olfaction performance in DWDs D3.3b - Assessments on the use of therapeutic products that are also targets for detection (e.g., opioids, drug products, etc.) in DWDs D3.3c - Guidelines for medical providers for use of pain products in DWDs that limit degradation of physiological status, or increase supportive care demand

Figure 2-3 Effectively Recognize, Prevent, and Treat Pain in DWDs

2.4 Optimal Treatments and Protocols for Injuries and Return-to-Duty Plans for DWDs (D4)

The identification of optimal treatments, protocols, and devices for use on DWDs is critical in determining return-to-duty timelines following injury resulting from occupational hazards. This includes characterizing the occurrence, mitigation, and treatment of injuries from environmental exposures (D4.1), the development of optimized treatments and protocols for resuscitation, ventilation, and bleeding control following injury, as well as tools and strategies for treatment of blast, burn, and crush injuries (D4.2 – D4.3), the development of assessment tools to identify and treatment guidelines for behavioral issues that develop from their environment or injury (D4.4), and the development of rehabilitation and return-to-duty guidelines for injured DWDs (D4.5) [1].

Treat and Rehabilitate	S&T Paths	Capabilities
Optimal Treatments and Protocols for Injuries and RTD Plans for DWDs (D4) D4.1 D4.2 D4.3 D4.4 D4.5 D4.1a - D4.5b (10 total)	D4.1 - Identify treatments and countermeasures for environmental exposures in DWD	 D4.1a - Countermeasures and treatments for environmental exposures (e.g., heat, cold, high altitude, toxin/toxic exposure) in DWDs D4.1b - Materiel products to mitigate/prevent environmental exposures (e.g., heat, cold, high altitude, toxin/toxic exposure) in DWDs
	D4.2 - Identify solutions for combat and non-combat injuries in DWD	 D4.2a - DWD guidelines for hemorrhage control, ventilation, resuscitation, damage control, and shock throughout the continuum of care D4.2b - Treatment tools and strategies for combat and non-combat injuries (e.g., blast, burn, and crush injuries, head injury, and soft tissue and skeletal injuries) for DWDs D4.2c - Materiel products to mitigate/prevent combat injuries (e.g., blast, burn, and crush injury, and soft tissue and skeletal injuries) in DWDs
	D4.3 - Identify regenerative medical therapies in DWD	D4.3a - Materiel medical products specific for regenerative and coagulopathy support (e.g., platelet rich plasma) for DWDs
	D4.4 - Develop assessments, preventions, and treatments for behavioral issues in DWD	 D4.4a - Assessment guidelines to identify behavioral issues related to housing and transport of DWDs D4.4b - Treatment and prevention guidelines for acute onset behavioral issues in DWDs
	D4.5 - Develop DWD guidelines for return-to-duty, - function, and disposition	 D4.5a - Guidelines and protocols for readiness, return-to-function rehabilitation, return-to-duty, or disposition, following injuries in DWDs D4.5b - Readiness metrics to define the DWD's usage status (Canine PULHES)

Figure 2-4 Optimal Treatments and Protocols for Injuries and Return-to-Duty Plans for DWDs

2.5 Identify and Characterize Risk Factors for MSKIs in DWDs (D5)

The identification and characterization of occupational risk factors for MSKIs is an important factor for DWD readiness in both prevention and mitigation. This includes knowledge of MSKI risk factors based on job function (D5.1), the probability of MSKI occurrence based on breed, genetics, and/or body conformation (D5.2) with a goal of identifying preventions and treatments for MSKIs (D5.2) to maintain the operational readiness of the DWD [1].

Maintain, Manage, and Support	S&T Paths	Capabilities
Identify and Characterize Risk Factors for MSKIs in DWDs (D5)	D5.1 - Develop metrics and knowledge of job function and prevalence of MSKIs in DWDs	 D5.1a - Job/function-related factors influencing MSKI risk, both for deployed and non-deployed DWDs (e.g., infectious and non-infectious causes) D5.1b - Tools to relate DWD medical data to utilization duty, duty days lost, and total service life loss
D5.1 D5.2 D5.3	D5.2 - Develop assessments of physical factors which pre-dispose DWDs to MSKIs	 D5.2a - Assessments that identify relationships between cumulative/repetitive motion on MSKI risk, including non-combat exposure (e.g., training, kenneling) in DWDs D5.2b - Assessments that identify the physical conditions, biomechanics, and other individual specific factors which pre-dispose DWDs to MSKIs D5.2c - Assessments that characterize the relationships between occupational risk and MSKIs to monitor and maintain DWD health
D5.1a – D5.3b (7 total)	D5.3 - Identify preventions and treatments for MSKIs in DWDs	 D5.3a - Materiel/knowledge products for DWDs to prevent common MSKIs and sensory injuries, kennel configuration and design, enrichment, and loss of physical conditioning/physical activity D5.3b - Guidelines, policies, and rehabilitation knowledge/equipment to ensure return to duty following traumatic or chronic MSKIs in DWDs

Figure 2-5 Identify and Characterize Risk Factors for MSKIs in DWDs

3. **REFERENCES**

- 1. "Initial Capabilities Document (ICD) for Joint Research Needs of the DoD Working Dog Enterprise," Version 0.1, 9 December 2021
- 2. JHU/APL, "Defense Health Agency Science and Technology Portfolio Management Concept of Operations," Pre-decisional Draft, AOS-L-20-0230, 10 June 2022
- 3. JHU/APL, "Science and Technology Portfolio Management Process (STMP) Research Roadmapping Methodology," AOS-21-0929, August 2021
- 4. "Department of Defense (DoD) Working Dogs (WD) Capabilities-Based Assessment (CBA)," 9 December 2021
- 5. Congressional Research Service, "Defense Primer: RDT&E," *In Focus*, 10 November 2022
- 6. Institute for Defense Analysis, "Early State Research and Technology at U.S. Federal Government Agencies," April 2017
- 7. CJCSI 5123.01I, "Charter of the Joint Requirements Oversight Council and Implementation of the Joint Capabilities Integration and Development System," 30 October 2021
- 8. "Joint DOTmLPF-P Change Recommendations (DCR) for Department of Defense (DoD) Working Dog (WD) Enterprise Management," Version 0.1, 9 December 2021
- 9. C. Wooten, *Nerves and Nerve Injuries*, Chapter 18: Anatomy of the Olfactory Nerves, pp. 273–276, Elsevier Ltd., 2015

APPENDIX A. KEY DEFINITIONS

Terminology	Definitions
6.1	BA for Basic Research increases knowledge and understanding: discovery; hypothesis testing. ~ TRL/KRL 1–2 [5]
6.2	BA for Applied Research is the refinement of concepts into solutions: preclinical studies; drug formulation; device defined in animal model. ~TRL/KRL 2–3 [5]
6.3	BA for Advanced Technology Development is candidate solution development; proof of concept and product safety demonstrated (e.g., Phase 1–2a trials). ~TRL/KRL 3–6 [5]
Product Development	Performs the additional development activities required to mature Capabilities developed in S&T to the extent to which they can be delivered for full clinical or operational use by the intended end user.
Budget Activity	Categories within each appropriation and fund account that identify the purposes, projects, or types of activities financed by the appropriation or fund.
Capability Area	Reflects the highest structural element that encompasses broad areas of medical research within a Portfolio.
Capability- Based Assessment	Provides an analytic basis to identify capability requirements and associated capability gaps prior to development and submission of capability requirements documents for review and validation [4].
Capability Gap	The inability to meet or exceed a CR, resulting in an associated operational risk until closed or mitigated. The gap may be the result of no fielded Capability, lack of proficiency or sufficiency in a fielded Capability solution, or the need to replace a fielded solution to prevent a future gap [6].
Capability Requirement	A Capability that is needed to meet an organization's roles, functions, and missions in current or future operations [7]. In this SRP, the CR is derived from key source documents and outlines Capabilities (knowledge or materiel) required to meet current or future military medical needs.
Capability	The ability to complete a task or execute a course of action under specified conditions and level of performance [6]. In this SRP, Capability refers to the S&T knowledge and/or materiel products to be transitioned to Advanced Development or other end users.
Capability Objective	A clearly defined, decisive, and attainable goal toward realizing the CR. Some of the capability objectives were derived from capability gaps and rephrased for consistency and clarity.
DoD Component	DoD Components associated with DWDs include: Army, Air Force, Marine Corps, Navy, National Security Agency (NSA), National Geospatial Intelligence Agency, SOCOM, National Guard Bureau (NGB), DoD Intelligence Information System, and the Pentagon Force Protection Agency. It also includes agencies outside the DoD which include the Federal Protective Service (medical care) and US Secret Service (missions and medical care).
Evidence-based	The integration of the best available research findings considered the gold standard into clinical practice in the context of patient characteristics, culture, and preferences.

Terminology	Definitions
Exposure	Contact with a hazardous or potentially hazardous chemical, physical, or biological agent. Exposure may be short term, of intermediate duration, or long term. Assessment of individual health risk is dependent on the exposure concentration (how much), the frequency and duration of exposure (how long), and the multiplicity of exposures with other similar exposure agents [8].
Fitness	The ability to accomplish the tasks and duties unique to a particular operation and the ability to tolerate the environmental and operational conditions of the deployed location [4].
Hazard	Any real or potential condition that can cause injury, illness, or death to personnel or damage to or loss of equipment or property, mission degradation, or the environment [4].
Injury	 a. A term comprising such conditions as fractures, wounds, sprains, strains, dislocations, concussions, and compressions. b. Conditions resulting from extremes of temperature or prolonged exposure. c. Acute poisonings (except those caused by contaminated food) resulting from exposure to a toxic or poisonous substance. [4]
Materiel Solution	A new item developed or purchased to satisfy one or more CRs [8].
Medical Readiness	Ensuring working dogs are healthy, protected from potential threats, and ready for operations or contingencies.
Military Working Dog (MWD)	a. Any Government-owned dog procured, acquired, or bred to meet working dog requirements of the military departments and DoD agencies, collectively referred to as DoD Components.
	 b. Any canine bred, procured, or acquired to meet DoD Component requirements to support operations in the protection of installations, resources, and personnel, to include explosive and illegal narcotic detection capabilities, patrol, tracking, or other requirements prescribed by the DoD Component [4].
Olfaction	The sensation of smell that results from the detection of odorous substances aerosolized in the environment [9].
Operational Environment	The composite of the conditions, locations, and scenarios whereby military forces are employed to address crises and conflicts that are not limited to a geographic location.
Priority Capability Requirement	A CR that, through analysis by the portfolio, is deemed worthy of funding and pursuit.
Rehabilitate	A set of interventions needed when an individual is experiencing or is likely to experience limitations in everyday functioning as a result of aging or a health condition, including chronic diseases or disorders and injuries or traumas. Examples of function limitations include difficulties with cognition, sight, hearing, communication, movement, behavioral regulation, or physical performance. Rehabilitation enables an individual to return to duty and maintain or return to their daily life activities while maximizing their wellbeing [4].
S&T Path	Describes the high-level research activities needed to support the transition of Capabilities to Advanced Development or other end users.

Terminology	Definitions
Veterinary Services	The DoD veterinary services capability encompasses animal health and welfare and veterinary public health. Veterinary public health focuses on the animal health interface with human health and environmental health and is an essential part of public health. More specifically, veterinary services consist of the practice of veterinary medicine and surgery, including diagnosis and treatment of sick or injured animals; animal health and zoonotic disease surveillance, epidemiology, control, and prevention of zoonosis; food protection; management of health aspects of laboratory animal facilities and diagnostic laboratories; biomedical research; health education and extension; production and control of biological products and medical devices; management of domestic and wild animal populations; protection of drinking water and the environment; and shared management of public health emergencies [4].

APPENDIX B. ACRONYMS

AHP	Analytical Hierarchy Process
BA	Budget Activity
CA	Capability Area
CBA	Capabilities Based Assessment
CBRN	Chemical, Biological, Radiological, and Nuclear
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
CPG	Clinical Practice Guideline
C-PTSD	Canine Post-Traumatic Stress Disorder
CR	Capability Requirement
DAD	Deputy Assistant Director
DHA	Defense Health Agency
DoD	Department of Defense
DWD	DoD Working Dogs
FYDP	Future Years Defense Program
ICD	Initial Capabilities Document
IR	Infrared
JCIDS	Joint Capabilities Integration and Development System
JHU/APL	The Johns Hopkins University Applied Physics Laboratory
KRL	Knowledge Readiness Level
MEDCOM	Medical Command
MHS	Military Health System
MSK	Musculoskeletal
MSKI	Musculoskeletal Injury
PM	Program Managers

POM	Program Objective Memorandum
РоР	Period of Performance
PPE	Personal Protective Equipment
PULHES	Physical capacity/stamina (P), upper extremities (U), lower extremities (L), hearing and ears (H), eyes (E), and psychiatric (S)
R&D	Research and Development
R&E	Research and Engineering
RLA	Research Landscape Analysis
RTD	Return-to-Duty
S&T	Science and Technology
SME	Subject Matter Expert
SRP	Strategic Research Plan
STP	Science and Technology Path
TBI	Traumatic Brain Injury
TRL	Technology Readiness Level
UV	Ultraviolet
USAISR	United States Army Institute of Surgical Research
USASOC	United States Army Special Operations
USSOCOM	United States Special Operations Command
WDT	Working Dog Team
WRAIR	Walter Reed Army Institute of Research
YOE	Year of Execution