June 2024

Defense Health Agency Strategic Research Plan: Combat Casualty Care



REVISION HISTORY

Revision	Entered by	Reason	Date

CONTENTS

Page

Contents…. iii

Figures…..... iv

Tables…… v

1. Overview and Organization 1–1

2. Capability Requirements and Associated S&T Paths 2–1

2.1 Tactical Combat Casualty Care (C1) 2–2
2.2 Resuscitative Strategies and Care (C2).....2–3
2.3 Care of Complex Injuries and Organ Support (C3) 2–4
2.4 Forward Surgical Care (C4).....2–5
2.5 Functional Recovery from Traumatic Wound and Burn Injuries (C5).....2–6
2.6 Effects of Transport on Complex Injuries (C6) 2–7
2.7 En Route Care (C7).....2–8
2.8 Virtual Health and Monitoring (C8) 2–9
2.9 Scalable Triage (C9) 2–10
2.10 Autonomous Systems (C10) 2–11

3. References.....3–1

Appendix A. Key Definitions A–1
Appendix B. Acronyms B–1

FIGURES

Page

Figure 1-1 SRP Hierarchy 1–2

Figure 2-1 Capability Requirement Graphic Example 2–1

Figure 2-2 Tactical Combat Casualty Care S&T Paths and Capabilities 2–2

Figure 2-3 Resuscitative Strategies and Care S&T Paths and Capabilities 2–3

Figure 2-4 Care of Complex Injuries and Organ Support S&T Paths and Capabilities 2–4

Figure 2-5 Forward Surgical Care S&T Paths and Capabilities 2–5

Figure 2-6 Functional Recovery from Traumatic Wound and Burn Injuries S&T Paths and Capabilities 2–6

Figure 2-7 Effects of Transport on Complex Injuries S&T Paths and Capabilities 2–7

Figure 2-8 En Route Care S&T Paths and Capabilities 2–8

Figure 2-9 Virtual Health and Monitoring S&T Paths and Capabilities 2–9

Figure 2-10 Scalable Triage S&T Paths and Capabilities 2–10

Figure 2-11 Autonomous Systems S&T Paths and Capabilities 2–11

TABLES

Page

Table 1-1 Capability Areas Included in the SRP Iteration 1–3

Table 1-2 Capability Requirements Included in this SRP Iteration..... 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 (M) 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 cycle
- Provide the oversight and concurrence of Year of Execution (YOE) spend plans that Program Managers will be responsible for developing as a recommendation to DHA R&E
- 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 a Portfolio
- **Capability Requirements** (CRs) are derived from key source documents (e.g., Joint Capabilities Integration and Development System (JCIDS)) containing capability requirements and gaps, and outline Capabilities (knowledge or materiel) required to meet current or future military medical needs

- **S&T 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 1-1 shows the hierarchical relationship between the components of the SRP, with the associated reference schema.

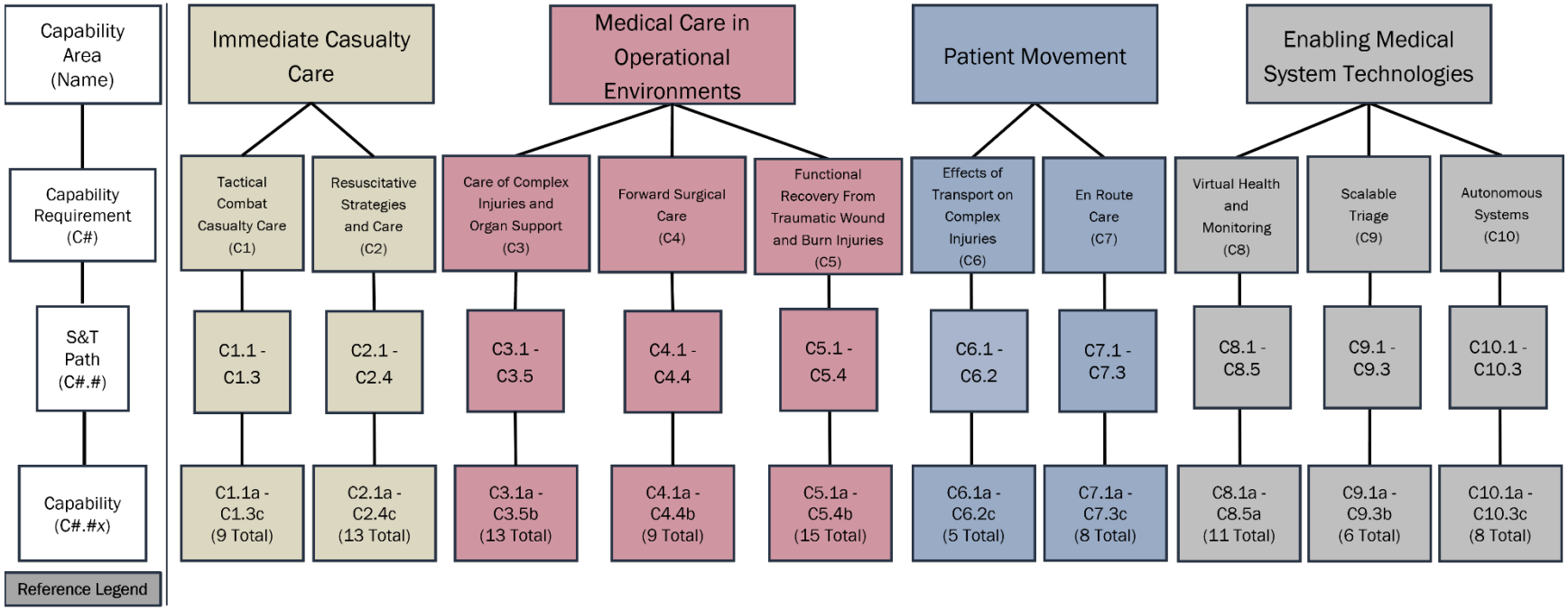


Figure 1-1 SRP Hierarchy

Combat Casualty Care (CCC) encompasses the assessment, diagnosis, treatment, stabilization, and disposition (return to duty or evacuation) of service members at point of need (PON), far-forward, en route, and in extended pre-hospital environments. The scope of the CCC SRP includes CRs that will optimize recovery from combat-related injuries to decrease the burden of survivorship, reduce morbidity and mortality across the continuum of CCC, and accelerate return to duty, when possible. CRs within this SRP focus on Immediate Casualty Care, Medical Care in Operational Environments, Patient Movement, and Enabling Medical System Technologies. The CCC SRP offers a plan for identifying, developing (when necessary), evaluating, and transitioning methods, therapeutics, and technologies that provide acute and early combat-related trauma management solutions. In this SRP, continuum of care is defined as

an integrated system that guides care at PON and tracks wounded, ill, or injured (WII) service members through the various roles of care (RoC; 1, 2, and 3) by facilitating seamless movement using comprehensive health services through discharge from definitive care [1].

SRPs outline 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 CCC CRs in this SRP are organized into four (4) CAs, as shown in Table 1-1.

Table 1-1 Capability Areas Included in the SRP Iteration

Capability Area	Capability Area Description
Immediate Casualty Care	Improve resuscitative care, trauma management, immediate stabilization, and medical assessments and treatment at point of need (PON) to maximize survivability and return to duty (when feasible).
Medical Care in Operational Environments	Improve patient assessment, surgical intervention, and treatment for effective critical/medical care delivery from PON and across the continuum of care.
Patient Movement	Increase provider capacity and en route capability in future intra/inter theater operational environments to optimize critical/medical care delivery of combat casualties during transport.
Enabling Medical System Technologies	Advance enabling medical and autonomous systems to monitor, assess, triage, and transport combat casualties to improve survivability and patient outcomes across the continuum of care.

Priority CCC CRs are listed in Table 1-2, with each CR noted via a C number (i.e., C1, C2, C3, C4). 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.

Table 1-2 Capability Requirements Included in this SRP Iteration

C No.	Capability Requirement	Capability Requirement Description
C1	Tactical Combat Casualty Care	Immediate, tactical, and PON life-saving procedures, strategies, and products to stabilize WII casualties. [2, 3, 7]

C No.	Capability Requirement	Capability Requirement Description
C2	Resuscitative Strategies and Care	Medical solutions to prevent shock, manage hemorrhage control, and resuscitation to increase survivability and maximize outcomes at PON and through the continuum of care. [2, 3, 6, 7]
C3	Care of Complex Injuries and Organ Support	Assessment and treatment of polytrauma, combined injury, and multi-organ support across the continuum of care (including extended periods when evacuation or mission requirements surpass capabilities) [2, 3, 5, 7, 8]
C4	Forward Surgical Care	Solutions to optimize patient outcomes from surgical care in the forward environment. [2-4]
C5	Functional Recovery from Traumatic Wound and Burn Injuries	Solutions to effectively assess, treat, and manage complex injuries, burns, and wounds. [2, 3, 5, 7]
C6	Effects of Transport on Complex Injuries	Understand the effects of transport and its impact on patient outcomes. [6]
C7	En Route Care	Solutions to improve en route patient care and provider capacity and capability during transport. [3, 6]
C8	Virtual Health and Monitoring	Decision support tools and closed loop systems (including virtual systems) to assess and monitor physiological and injury status across the continuum of care. [3, 4, 6, 7]
C9	Scalable Triage	Standardized solutions to effectively evaluate combat casualties under constrained and limited capability conditions. [2, 4, 6, 7]
C10	Autonomous Systems	Medical system technologies using semi-autonomous, autonomous, and unmanned capabilities during transport and across the operational continuum of care. [3, 4]

2. CAPABILITY REQUIREMENTS AND ASSOCIATED S&T PATHS

This section outlines the CCC 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. Each CR in the sections that follow is depicted as a figure in the format shown in Figure 2-1.

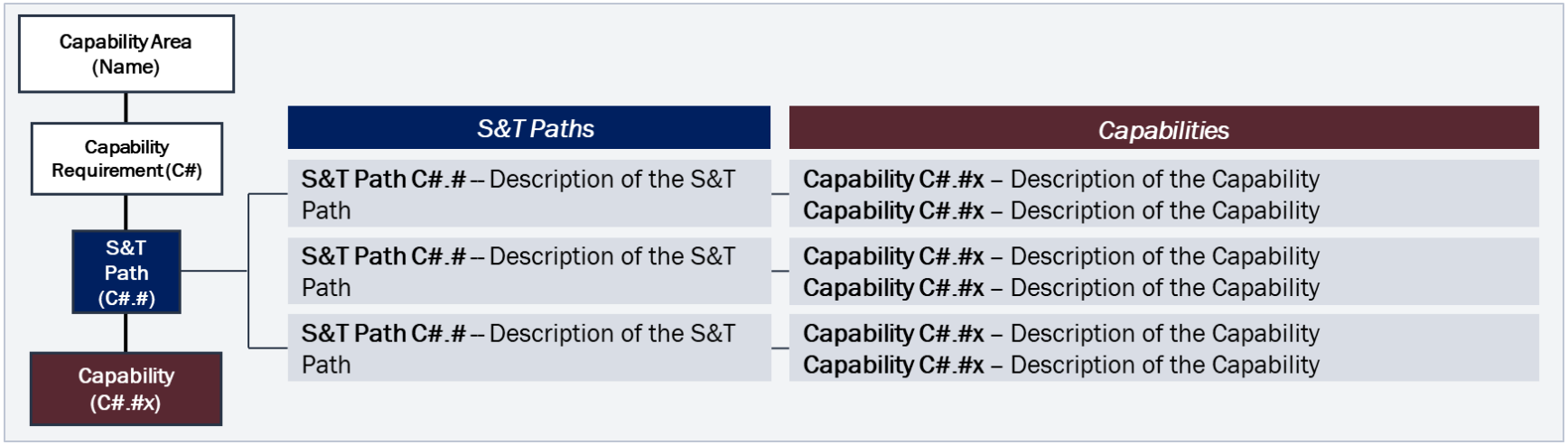


Figure 2-1 Capability Requirement Graphic Example

The CRs, STPs, and Capabilities outlined in this section focus on addressing DoD-specific, validated Joint/Service medical S&T needs. The SRP is limited to activities that are unlikely to be resolved through S&T activities outside of the DHA—specifically, the SRP captures military exposures or injuries that are unique, or where potential solutions may differ from or not be adequately addressed by efforts elsewhere.

2.1 Tactical Combat Casualty Care (C1)

Tactical Combat Casualty Care (TCCC) encompasses advanced medical solutions to assess, treat, and stabilize combat-related injuries needed at PON through ROC 1, and the ability to hold patients longer when evacuation is challenged. Future large-scale, multi-domain combat operations will significantly contest the military's "Golden Hour", or "Golden Day" paradigm used to date. Responding to this challenge and taking measures to maintain high rates of survival and recovery among wounded service members will require innovative solutions that sustain/build medical capabilities as far forward as possible to support and immediately stabilize the injured service member in addition to continuing that care when evacuation is delayed or unavailable.

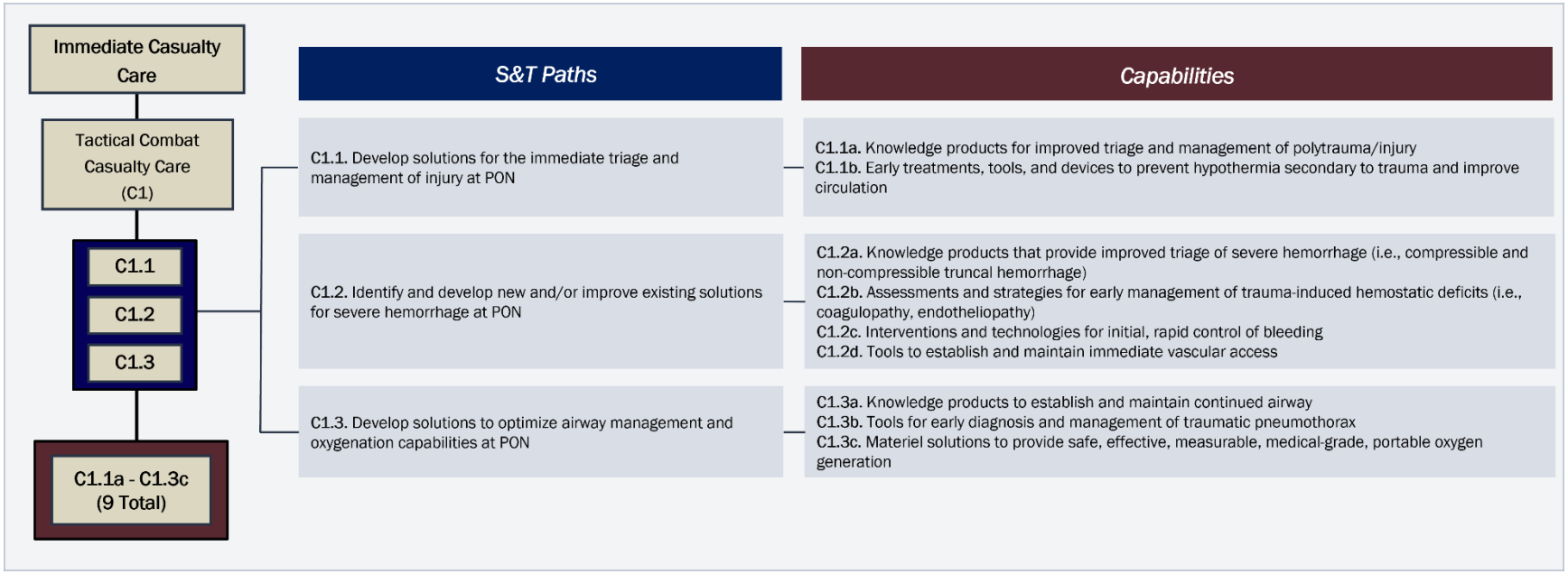


Figure 2-2 Tactical Combat Casualty Care S&T Paths and Capabilities

2.2 Resuscitative Strategies and Care (C2)

Advanced resuscitative care is paramount for battlefield survivability at PON and anywhere along the continuum of care. Delays in evacuation and high casualty rates in the future battlespace will place further demands on advanced trauma care if casualties deteriorate and need to be resuscitated again anywhere in the evacuation chain. Effective hemorrhage control and replacement of lost blood volume are the life-saving, battle-proven treatments most likely to mitigate hemorrhagic shock and blood failure. The ability to provide enough resuscitative products, such as whole blood, at the point of need in the future battlespace for large numbers of casualties remains a critical medical challenge for operational forces. The Resuscitative Strategies and Care CR outlines forward resuscitative and augmenting solutions (blood, blood products and substitutes) to wounded service members experiencing complications from trauma, shock, or other life-threatening conditions in austere and resource-limited environments.

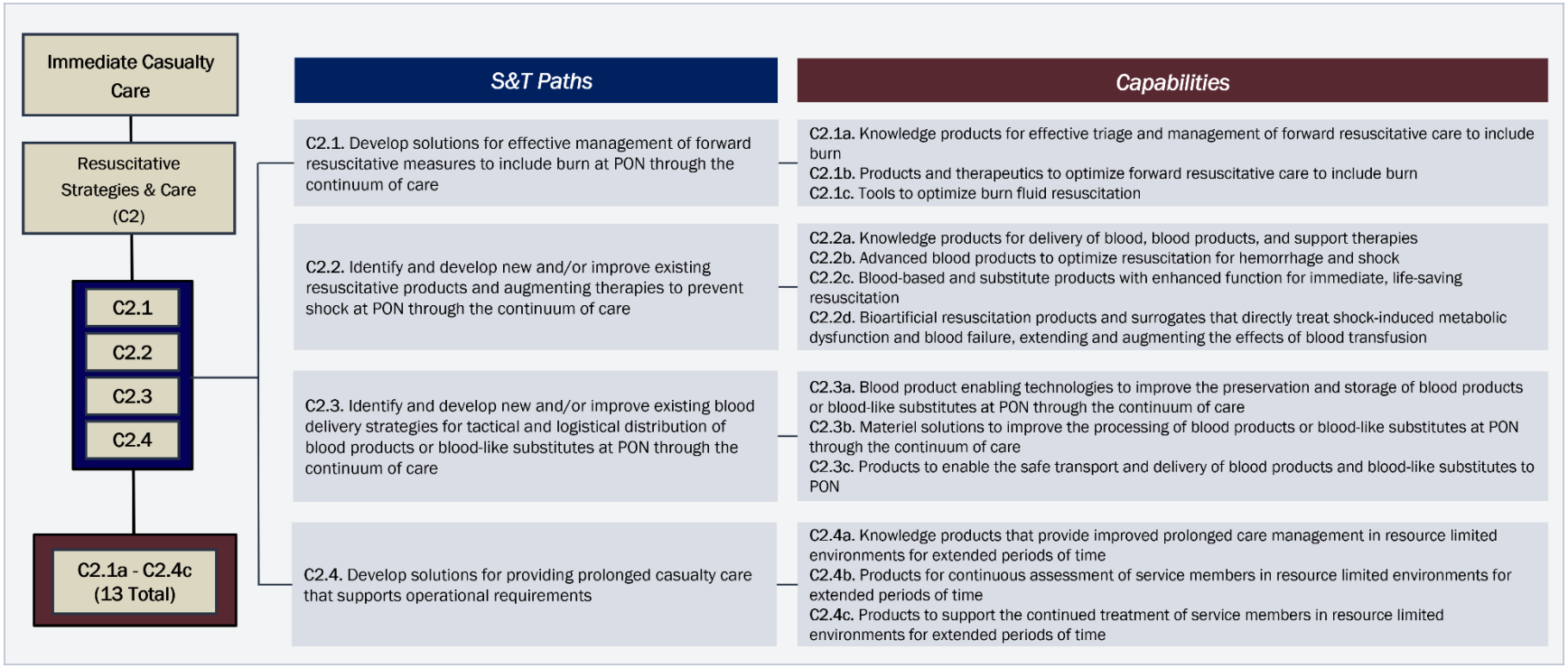


Figure 2-3 Resuscitative Strategies and Care S&T Paths and Capabilities

2.3 Care of Complex Injuries and Organ Support (C3)

Providers in the future battlespace will be challenged with managing large casualty volumes with a need for high acuity care with limited resources. Across the continuum of care, far forward providers will need to have adaptable medical solutions to help manage complex injuries and further address the respiratory, cardiovascular, metabolic, and immunologic consequences of trauma, shock, organ failure, and burn in contested and isolated environments. Prolonged and resource-limited settings further drive the need to develop tools that support the wounded across various operational platforms in diverse environments of the future battlespace. Activities within this Care of Complex Injuries and Organ Support CR seek to resolve critically identified Joint deficiencies associated with casualty care for WII service members in a complex and resource-limited operational environment.

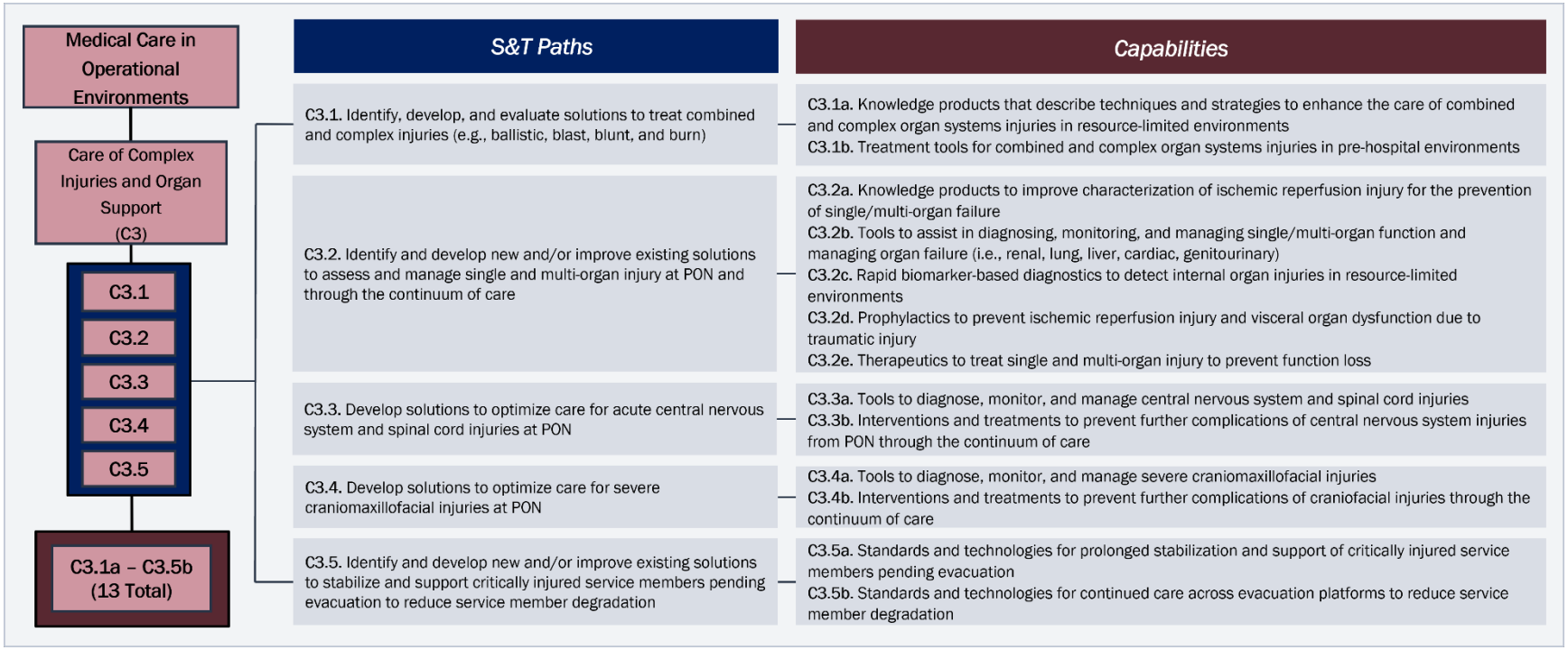


Figure 2-4 Care of Complex Injuries and Organ Support S&T Paths and Capabilities

2.4 Forward Surgical Care (C4)

In the future battlespace, contested and resource-limiting environments will hinder evacuation and access to larger medical elements closest to PON. It will be incumbent upon medical, evacuation, and logistics elements to position surgical assets further forward and in greater isolation than in recent theaters. Forward surgical care (also known as damage control surgery (DCS) is a principal component of military medicine, enabling medical personnel to provide life-saving surgical interventions to injured service members. Activities within the Forward Surgical Care CR include identifying and developing new or leveraging existing knowledge and materiel solutions needed to surgically stabilize life-threatening injuries closest to PON. Performance of these critical surgical interventions promotes survivability of injured service members and helps to further prevent or mitigate a casualty's irreversible physiologic deterioration. As we prepare for the future fight without the benefits of the "Golden Hour", the battlefield medical system must be modernized to maximize the further-forward surgery paradigm and bring with it medical solutions that will ensure expeditious surgical care to wounded service members in theatre.

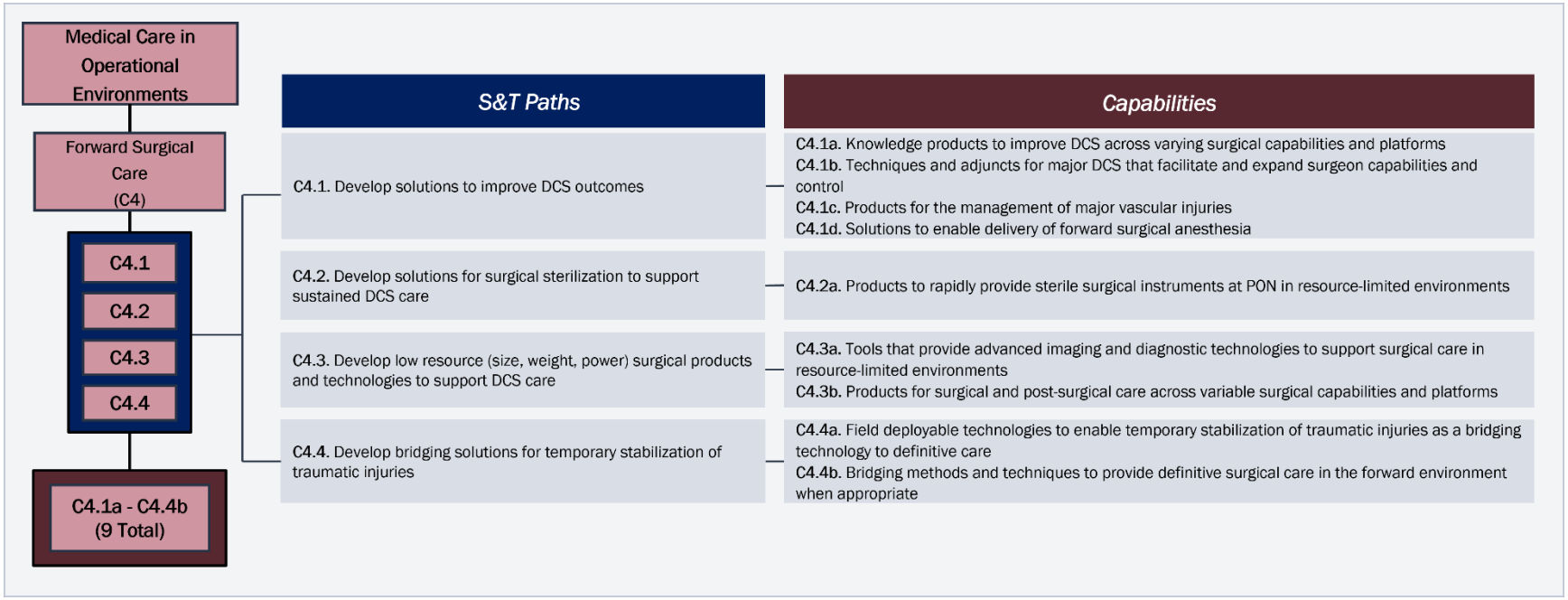


Figure 2-5 Forward Surgical Care S&T Paths and Capabilities

2.5 Functional Recovery from Traumatic Wound and Burn Injuries (C5)

Significant increases to the frequency and severity of traumatic wound and burn injuries are predicted to challenge capability and capacity in a future battlespace. Urban dense terrain and multi-domain operations of the future are expected to generate complex wounds and burn injuries that will require advanced prolonged care and stabilization when tactical evacuations to robust rear element medical care infrastructures are delayed. Under current doctrine, these wound and burn casualties will quickly overwhelm providers and available resources in an already strained and complex operational environment. Moreover, the specialized care needed for burn patients comes with significant challenges as even a small number of burn casualties can deplete a large number of resources quickly. As a result, the need for aggressive battlefield wound and burn care technologies are paramount to providing advanced care to wounded service members. Activities within the Functional Recovery from Traumatic Wound and Burn Injuries CR focus on yielding knowledge and advanced materiel solutions needed to assess, treat, and manage complex wounds and burn injuries in any pre-hospital, resource-limited battlespace environment.

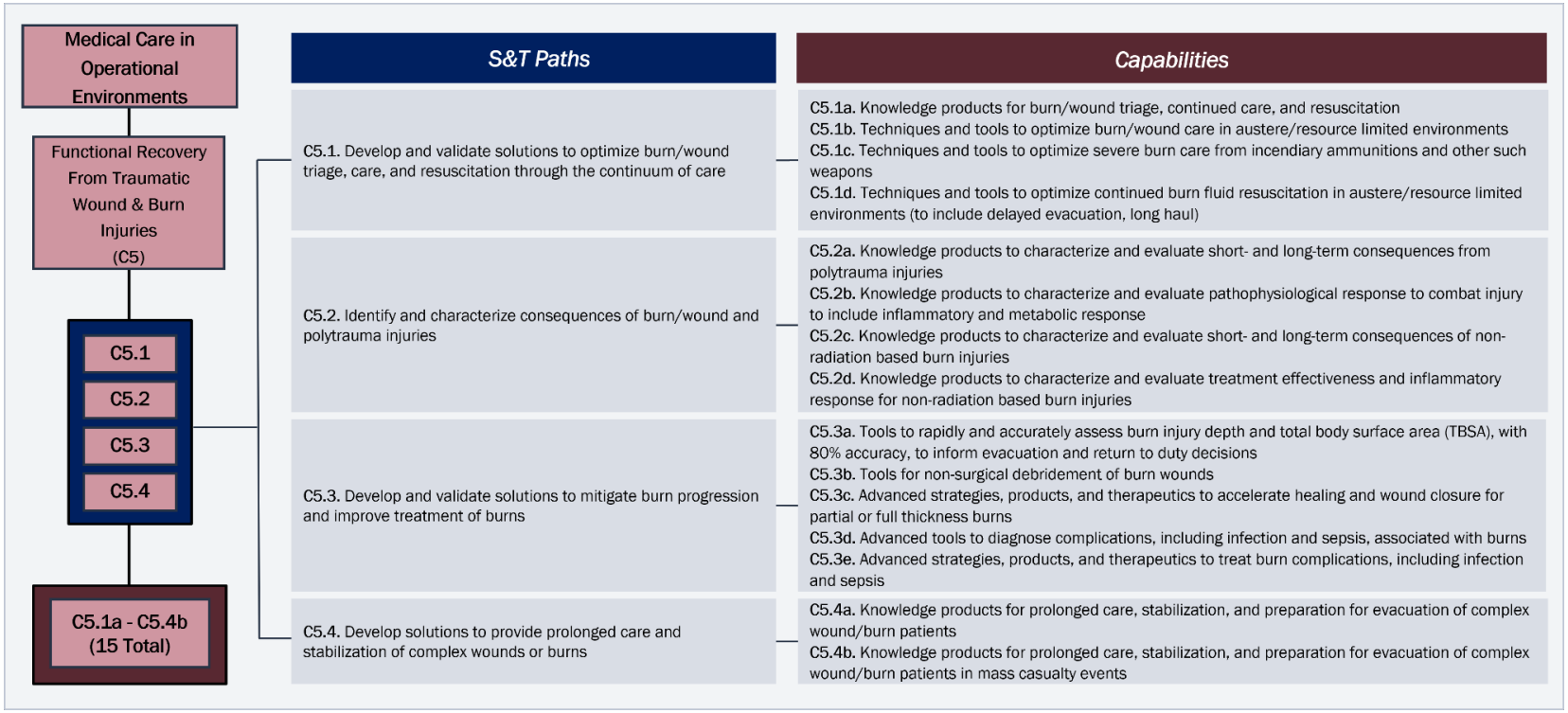


Figure 2-6 Functional Recovery from Traumatic Wound and Burn Injuries S&T Paths and Capabilities

2.6 Effects of Transport on Complex Injuries (C6)

As the military engages in future multi-domain operations, contested air, land, and sea superiority will result in significantly extended evacuation times for WII service members. Distinct from previous research and development efforts, the future battlespace will require military en route care research to focus on the intersection of the patient, their injury or illness, the stresses of transport, and the environment of care in addition to the multi-modal transport platform that may be used. Casualty care providers will need to better understand the effects of prolonged transport time, mode(s) of transport, and environmental factors that can negatively impact service members with complex/polytraumatic injuries under these extended and diverse conditions. Activities within the Effects of Transport on Complex Injuries CR focus on understanding and advancing knowledge to better enable effective casualty support and treatment during transportation from PON to more advanced ROCs, in between ROCs via various evacuation platforms, and scalability. Understanding the physiological response to transport is not only needed to inform future practice guidelines and policy decisions for anticipated conflicts, but provides necessary operational and medical data, highlights important deficiencies in the current system, and offers information that can be used to create robust solutions for medical evacuation support in the future battlespace.

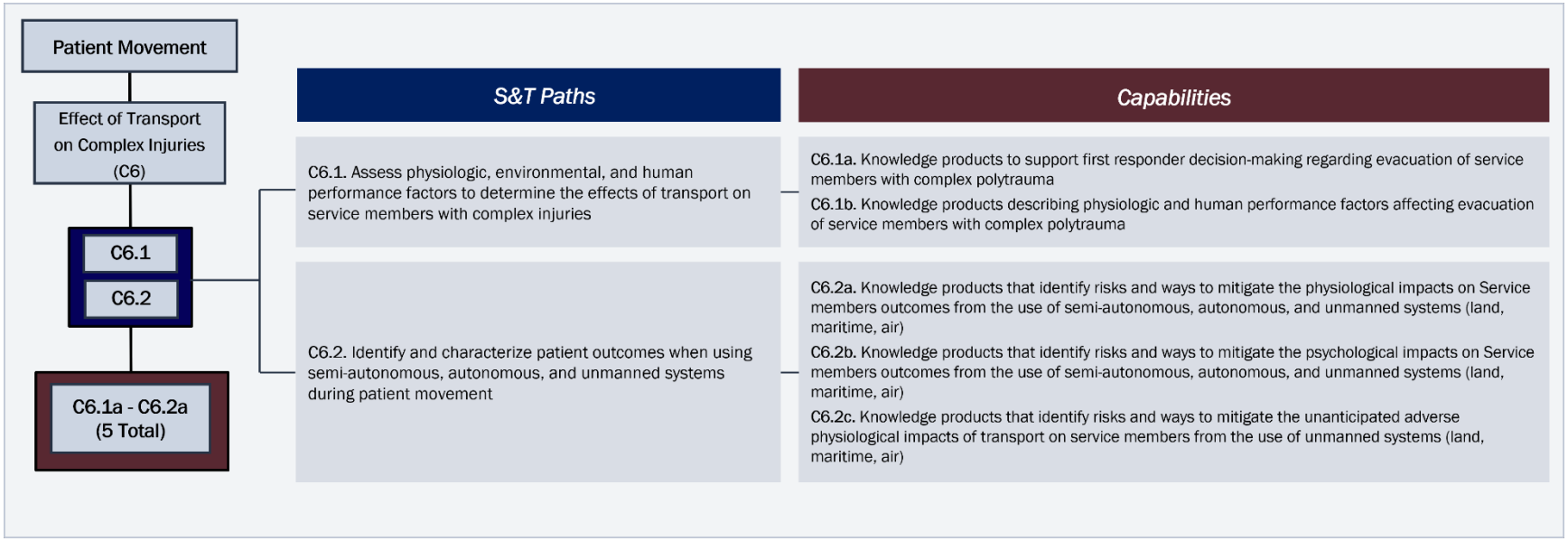


Figure 2-7 Effects of Transport on Complex Injuries S&T Paths and Capabilities

2.7 En Route Care (C7)

According to military doctrine, patient movement throughout the continuum of medical care is termed "en route care," an important element of which is providing the appropriate medical capability during the transport so that the patient's clinical condition is not compromised. In this SRP, en route care includes (1) ground transport at point of injury through both unregulated and regulated means; (2) ground, maritime, and rotary and fixed wing tactical transport (TACEVAC); (3) strategic intercontinental air transport; (4) maritime transport from surface and underwater ships out at sea; and (5) nontraditional space medical mobility systems [15]. Effective en route care throughout the continuum is a critical element needed during combat operations to ensure optimal patient outcomes and maintain operational advantage. Activities within the En Route Care CR include focus on modalities to increase care provider capability and capacity during transportation of casualties and solutions that enhance patient movement efforts in pre-hospital and mass evacuations scenarios. A Joint approach to research efforts will be key to advancing solutions with a consideration that each service has distinct needs within their respective domain of operations that will continue to be discussed and deconflicted as necessary.

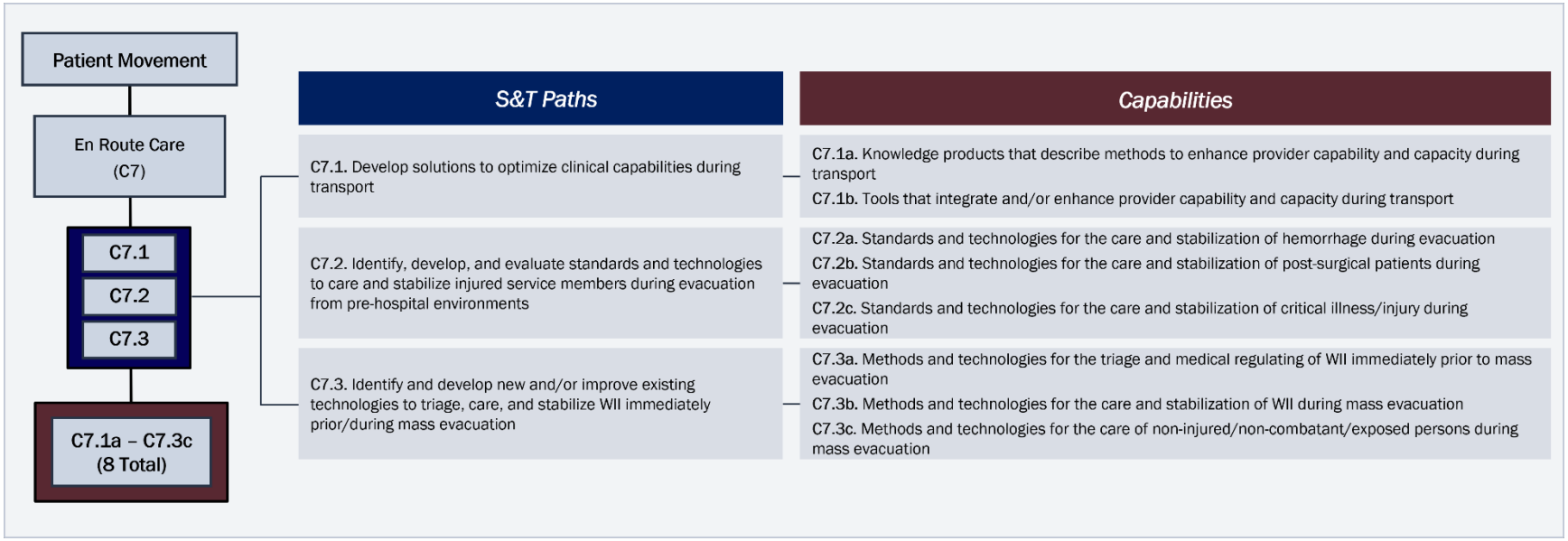


Figure 2-8 En Route Care S&T Paths and Capabilities

2.8 Virtual Health and Monitoring (C8)

To meet the challenges of the future battlespace, the DoD will need technological advancements that will enhance provider capabilities that decrease cognitive load, aid decision-making through artificial intelligence (AI), or offer telementoring/telemedicine support to improve patient outcomes and enhance the combat health system across the continuum of care. The Virtual Health and Monitoring CR focuses on decision support tools that assist care providers in providing enhanced assessment, diagnosis, intervention, treatment, and continued monitoring of a patient's physiological and injury status. Furthermore, these Joint capabilities will target enabling critical care expertise earlier into far forward environments and interfacing seamlessly with Joint tactical networks in denied, degraded, intermittent, and limited environments (DDIL). Each of the services and their respective cyber security offices have operational requirements for implementation of virtual medical systems that will continue to be discussed and deconflicted as necessary to develop Joint capabilities.

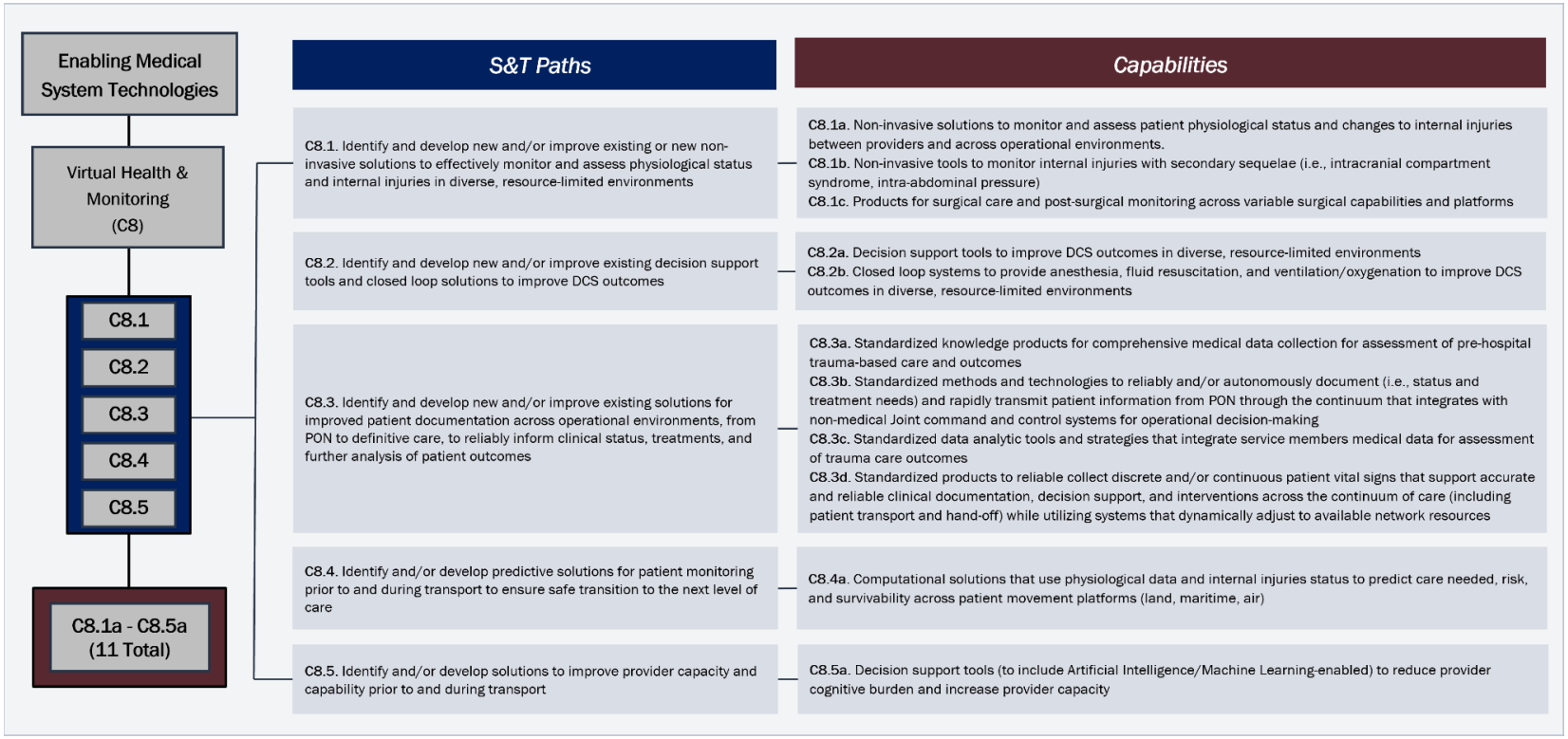


Figure 2-9 Virtual Health and Monitoring S&T Paths and Capabilities

2.9 Scalable Triage (C9)

Optimizing casualty care requires a coordinated, real-time, common operating platform to extend the capacity of the MHS to multi domain operations (MDO). Developing a Joint, forward-deployed intelligent trauma system is needed to support the medical care team's ability to efficiently triage, communicate, and care for wounded service members across ROCs, improve operational planning efforts for evacuation, and promote overall survivability in the future battlespace. Moreover, these force-multiplying capabilities are crucial for mitigating resource and medical team constraints experienced during mass casualty events. This Scalable Triage CR seeks to resolve deficiencies for effective triage through the use of fast and accurate screening, diagnostic, and communication tools that can be used across the services, and effective protocols suited for the tactical environment that adapt to the limitations of the operational environment, the mission, and available resources (e.g., time, equipment, supplies, personnel, and evacuation capabilities).

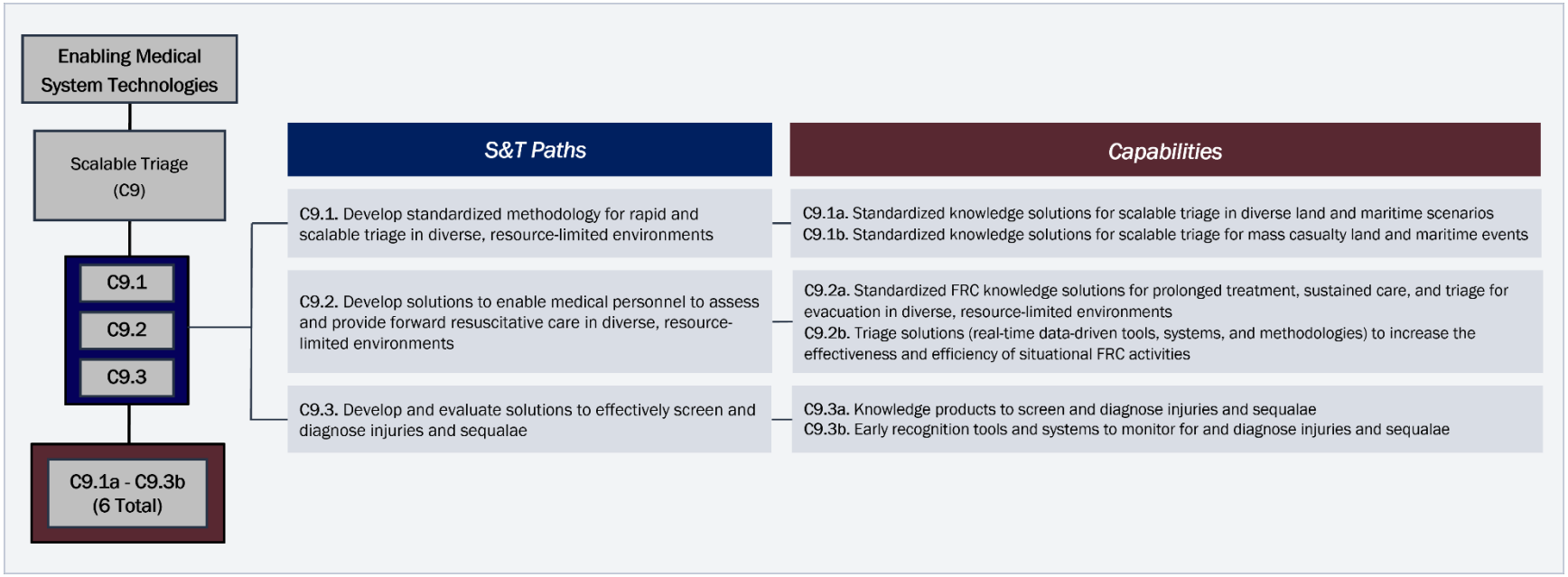


Figure 2-10 Scalable Triage S&T Paths and Capabilities

2.10 Autonomous Systems (C10)

As the military prepares for a future conflict where air superiority and freedom of movement is limited or contested across an active battlespace, access to advanced systems that utilize clinical decision support through AI, autonomous medical technologies, and robotics to enhance casualty care and evacuation, when necessary, will be vital. Autonomous systems have the potential to provide the medical support needed in contested environments at the PON and during transport across the operational continuum of care; but must be further developed in order to create an unmanned evacuation capability that can reliably care for combat casualties in the future. These solutions must include biosensors, artificial intelligence, and machine learning to enable the development of closed-loop/autonomous medical systems capable of providing critical care. The Autonomous System CR seeks to resolve deficiencies in knowledge and materiel solutions associated with integrated/interfaced medical system technologies using semi-autonomous, autonomous, and unmanned capabilities and help augment medical providers in operational environments, reducing task saturation and perform care and evacuation needs in situations that are unsafe.

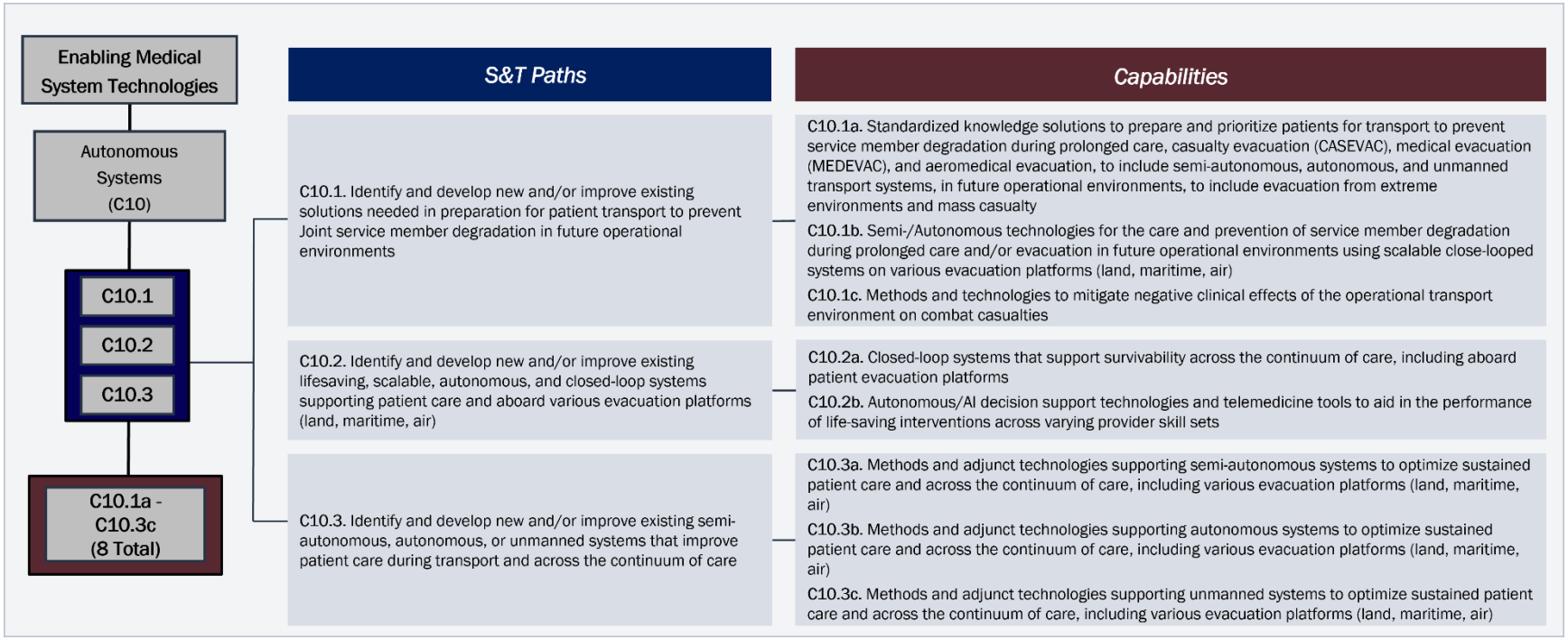


Figure 2-11 Autonomous Systems S&T Paths and Capabilities

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APPENDIX A. KEY DEFINITIONS

Term	Definition
6.1	BA for Basic Research increases knowledge/understanding: discovery; hypothesis testing. ~TRL 1–2
6.2	BA for Applied Research is the refinement of concepts into solutions: pre-clinical studies; drug formulation; device defined in animal model. ~TRL 2–3
6.3	BA for Advanced Technology Development is candidate solution develop-ment; proof of concept and product safety demonstrated (e.g., Phase 1–2a trials). ~TRL 3–6
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	The S&T knowledge and/or materiel products to be transitioned to product development or other end users.
Capability Area	Reflect the highest structural element that encompasses broad areas of medical research within a Portfolio.
Capability Gap	The inability to meet or exceed a Capability Requirement, 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, or the need to replace a fielded Capability to prevent a future gap.
Capability Requirement	A capability which is needed to meet an organization's roles, functions, and missions in current or future operations. In this SRP, the Capability Requirement is derived from key source documents, and outline capabilities (knowledge or materiel) required to meet current or future military medical needs.
Casualty	Any person who is lost to the organization by having been declared dead, duty status—whereabouts unknown, missing, ill, or injured. [14]
Casualty Evacuation	The unregulated movement of casualties that can include movement both to and between medical treatment facilities. Also called CASEVAC. [14]
Continuum of Care	An integrated system of care that guides and tracks patients over time and facilitates seamless movement through comprehensive health services from POI to discharge from definitive or rehabilitative care [1].
Combat Casualty Care	Encompasses the assessment, diagnosis, treatment, stabilization, and disposition (return to duty or evacuation) of service members at POI, far-forward, en route, and in extended pre-hospital environments.

Term	Definition
Conventional Weapons	The term conventional weapons or conventional arms generally refer to weapons whose ability to damage comes from kinetic, incendiary, or explosive energy and exclude weapons of mass destruction (e.g., nuclear, biological, radiological, and chemical weapons). [14, 21]
Criticality	The degree to which the capability is necessary to meet the mission specific requirements.
Enabling Medical System Technologies (Capability Area)	Advance enabling medical and autonomous systems to monitor, assess, triage, and transport combat casualties to improve survivability and patient outcomes across the continuum.
Extreme Environments	A mission extreme environment is defined as "extreme" if one of the following criteria is met: - Low temperatures – below -40 degrees Fahrenheit [18] - Altitude - as > 5,500 meters above sea level [19] - High temperatures – above >90-degrees Fahrenheit [20]
Immediate Casualty Care (Capability Area)	Improve resuscitative care, trauma management, immediate stabilization, and extreme environment assessment and treatment at PON to maximize survivability and return to duty (when feasible).
Injury	1. A term comprising such conditions as fractures, wounds, sprains, strains, dislocations, concussions, and compressions. 2. Conditions resulting from extremes of temperature or prolonged exposure. 3. Acute poisonings (except those due to contaminated food) resulting from exposure to a toxic or poisonous substance. [14]
Interdependency	Reliance of one S&T progression on the outcome of another or more S&T activities.
Intersection	Capabilities and associated S&T Paths in a Portfolio SRPs that have overlap with those in one or more other Portfolios.
Joint Capabilities Integration and Development System	Joint Capabilities Integration and Development System is the process by which the military develops and validates capability requirements for joint (more than 1 Service) use and interoperability.

Term	Definition
Mass Evacuation	1. Removal of a patient by any of a variety of transport means from a theater of military operation, or between health service support capabilities, for the purpose of preventing further illness or injury, providing additional care, or providing disposition of patients from the military health care system. (JP 4-02) 2. The clearance of personnel, animals, or materiel from a given locality. (JP 3-68) 3. The controlled process of collecting, classifying, and shipping unserviceable or abandoned materiel, United States or foreign, to appropriate reclamation, maintenance, technical intelligence, or disposal facilities. (JP 4-09) 4. The ordered or authorized departure of noncombatants from a specific area by Department of State, Department of Defense, or appropriate military commander. This refers to the movement from one area to another in the same or different countries. The evacuation is caused by unusual or emergency circumstances and applies equally to command or non-command sponsored family members. [14]
Mass Casualty	Any large number of casualties produced in a relatively short period of time, usually as the result of a single incident such as a military aircraft accident, hurricane, flood, earthquake, or armed attack that exceeds local logistic support capabilities. [14]
Medical Care in Operational Environments (Capability Area)	Improve patient assessment, surgical intervention, and treatment for effective critical/medical care delivery from PON and across the continuum of care.
Medical Evacuation	Medical evacuation is the timely, efficient movement and en route care by medical personnel of the wounded, injured, or ill persons from the battlefield and/or other locations to medical treatment facility. Also known as MEDEVAC. [22]
Morbidity	The incidence of disease; the rate of illness.
Mortality	The number of deaths that occur in a given area or period, or from a particular cause.
Operational Effectiveness	The ability of an individual service member, unit, or force to successfully conduct its assigned tasks and accomplish its mission.
Patient Movement (Capability Area)	Increase provider capacity and en route capability (e.g., ground, expeditionary, at-sea, aeromedical, extreme) in future intra/inter theater operational environments to optimize critical/medical care delivery of combat casualties during transport.
Polytrauma	Polytrauma is defined as two or more injuries to physical regions or organ systems, one of which may be life threatening, resulting in physical, cognitive, psychological, or psychosocial impairments and functional disability [13].

Term	Definition
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.
Prolonged Care	Also referred to as Prolonged Field Care or Prolonged Casualty Care. Patient care for extended periods of time when evacuation or mission requirements surpass available capabilities or capacity to evacuate the patient [11, 17].
Research Gap/S&T Investment	The lack of science and technology research activities identified through the Research Landscape.
Research Landscape Analysis	A data-driven characterization of the current state of S&T activities with regards to recently completed and ongoing research projects, as well as relevant scientific publications in the open literature.
Resource Limited Environments	Environments where access to clean water, electricity, and to a fixed or mobile medical facility is significantly degraded or denied, and where diagnostic and treatment resources and medical personnel are unavailable or limited for extended periods of time [17].
Subject Matter Expert	An individual who has accumulated great knowledge in a particular field or topic.
S&T Path (STP)	Describe the high-level research activities needed to support the transition of Capabilities to product development or other end users.
Tactical Combat Casualty Care	The ability to provide early life-sustaining medical care to casualties in any of three TCCC phases (care under fire, tactical field care, and/or tactical evacuation care).
Tactical Evacuation Care	TACEVAC is the third phase in the Tactical Combat Casualty Care process. Tactical evacuation encompasses both medical evacuation (MEDEVAC) and casualty evacuation (CASEVAC). [23].
Wounded in Action	A casualty category applicable to a hostile casualty, other than the victim of a terrorist activity, who has incurred an injury due to an external agent or cause. The term encompasses all kinds of wounds and other injuries incurred in action, whether there is a piercing of the body, as in a penetration or perforated wound, or none, as in the contused wound. These include fractures, burns, blast concussions, all effects of biological and chemical warfare agents, and the effects of exposure to ionizing radiation or any other destructive weapon or agent. The hostile casualty's status may be categorized as SI, VSI, or NSI. [12, 15]

Term	Definition
Wounded, Ill, Injured	Service members are WII in the line of duty and require medical care and/or treatment to bring them to medical retention determination point and/or complete processing through the disability evaluation system. [16]

APPENDIX B. ACRONYMS

ACE	Autonomous Care and Evacuation
AHP	Analytical Hierarchy Process
AI	Artificial Intelligence
BA	Budget Activity
C3	Combat Casualty Care
CA	Capability Area
CASEVA	Casualty Evacuation
CBRN	Chemical Biological Radiological and Nuclear
CCC	Combat Casualty Care
CCCRP	Combat Casualty Care Research Program
CDMRP	Congressionally Directed Medical Research Programs
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
CPG	Clinical Practice Guidelines
CR	Capability Requirement
DAD	Deputy Assistant Director
DCS	Damage Control Surgery
DDIL	Denied, Degraded, Intermittent, and Limited Environments
DE	Directed Energy
DHA	Defense Health Agency
DHP	Defense Health Program
DoD	Department of Defense
FRC	Forward Resuscitative Care
FY	Fiscal Year
FYDP	Future Years Defense Program

ICC	Immediate Casualty Care
ICD	Initial Capabilities Document
JCIDS	Joint Capabilities Integration and Development System
KRL	Knowledge Readiness Level
M	Million
MASCAL	Mass Casualty
MCOE	Medical Care in Operational Environments
MEDEVAC	Medical Evacuation
NA	Not Applicable
POI	Point of Injury
PON	Point of Need
PoP	Period of Performance
R&E	Research and Engineering
RLA	Research Landscape Analysis
RL	Research Landscape
SBIR	Small Business Innovative Research
SFO	Support for Future Operations
S&T	Science and Technology
SME	Subject-Matter Expert
SRP	Strategic Research Plan
STP	S&T Path
TACEVAC	Tactical Evacuation Care
TATRC	Telemedicine and Advanced Technology Research Center
TBI	Traumatic Brain Injury
TRL	Technology Readiness Level

TCCC	Tactical Combat Casualty Care
USAMRDC	United States Army Medical Research and Development Command
USSOCOM	United States Special Operations Command
WII	Wounded, Ill, or Injured
YOE	Year of Execution