

# CDMRP



Department of Defense



Department of Defense  
Congressionally Directed Medical Research Programs

## **Fiscal Year 2021 Peer Reviewed Orthopaedic Research Program Stakeholders Meeting**

*U.S. Army Medical Research and Development Command*



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## Agenda

### FISCAL YEAR 2021 PRORP VIRTUAL STAKEHOLDERS MEETING MONDAY, 27 SEPTEMBER 2021

<p><b>Meeting URL:</b>  <a href="https://www.zoomgov.com/j/1602790747">https://www.zoomgov.com/j/1602790747</a>  <b>Meeting ID:</b> 160 279 0747  <b>Password:</b> 142910</p>
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9:55 – 10:10 a.m.	Log in and Registration	All Participants
10:10 a.m.	Welcome and Introductions	Dr. Akua Roach and Ms. Elizabeth Guman
10:20 a.m.	Moment of Silence	Dr. Lee Childers
10:25 a.m.	Meeting Overview and Objectives, Ground Rules for Discussion	Ms. Guman
10:30 a.m.	Leidos Administrative Remarks	Ms. Nancy Ayad
10:35 a.m.	Overview of the CDMRP and PRORP	Dr. Roach
10:55 a.m.	Military Operational Medicine Research Program/Joint Program Committee 5 (JPC-5)	Dr. Richard Shoge
11:05 a.m.	Combat Casualty Care Research Program (JPC-6)	Dr. Therese West
11:15 a.m.	Department of Veterans Affairs	Dr. Brian Schulz
11:25 a.m.	National Institutes of Health/National Institute for Arthritis Musculoskeletal and Skin Disorders	Dr. Chuck Washabaugh
11:35 p.m.	Survey Monkey Data Review	Dr. Roach and Ms. Guman
11:40 p.m.	Breakout Session Rules and Responsibilities	Ms. Guman
11:45 p.m. – 12:30 p.m.	Lunch	All Participants
<b>Breakout Sessions (2.5 hours)</b>		
12:30 p.m.	Breakout Session 1: Care for Return to Duty (Within 1 Year of Injury) for Military Service Members	Dr. Jessica Goetz and Dr. James Irrgang
	Breakout Session 2: Diagnosis and Acute Care of Prehospital Musculoskeletal Trauma Injuries in Military and Civilian Populations	Dr. Constance Chu and Dr. Aksone Nouvong

	<i>Breakout Session 3: Emerging Areas in Preclinical Orthopaedic Research</i>	Dr. Luis Alvarez and COL Leon Nesti
	<i>Breakout Session 4: Emerging Areas in Clinical Orthopaedic Research</i>	Dr. Stephen Goldman and Dr. Mike Hahn
	<i>Breakout Session 5: Knowledge Gaps in Surgical Care for Musculoskeletal Combat Casualties</i>	Dr. Jessica Rivera and Dr. Robert O'Toole
	<i>Breakout Session 6: Knowledge gaps in Surgical Care for Musculoskeletal Non-Combat Casualties</i>	LTC Jon Dickens and Dr. I. Leah Gitajn
3:00 p.m.	<i>Break</i>	All Participants
	<b><i>Report-out From Breakout Session Leaders</i></b>	
3:15 p.m.	<i>Breakout Session 1: Care for Return to Duty (Within 1 Year Of Injury) for Military Service Members</i>	Dr. Goetz and/or Dr. Irrgang
	<i>Breakout Session 2: Diagnosis and Acute Care of Prehospital Musculoskeletal Trauma Injuries in Military and Civilian Populations</i>	Dr. Chu and/or Dr. Nouvong
	<i>Breakout Session 3: Emerging Areas in Preclinical Orthopaedic Research</i>	Dr. Alvarez and/or COL Nesti
	<i>Breakout Session 4: Emerging Areas in Clinical Orthopaedic Research</i>	Dr. Goldman and/or Dr. Hahn
	<i>Breakout Session 5: Knowledge Gaps in Surgical Care for Musculoskeletal Combat Casualties</i>	Dr. Rivera and/or Dr. O'Toole
	<i>Breakout Session 6: Knowledge gaps in Surgical care for Musculoskeletal Non-Combat Casualties</i>	LTC Dickens and/or Dr. Gitajn
4:45 p.m.	Final Discussion and Next Steps	Dr. Roach and Ms. Guman
5:00 p.m.	Adjourn	All Participants

## Abbreviations

ARA	Applied Research Award
B	Billion
CDC	Centers for Disease Control and Prevention
CDMRP	Congressionally Directed Medical Research Programs
CSI	Congressional Special Interest
CTA	Clinical Trial Award
CTRA	Clinical Translational Research Award
DHA	Defense Health Agency
DMRDP	Defense Medical Research and Development Program
DOD	Department of Defense
EA	Expansion Award
FY	Fiscal Year
ICTA	Integrated Clinical Trial Award
IOM	Institute of Medicine
JPC	Joint Program Committees
M	Million
MOMRP	Military Operational Medicine Research Program
NCI	National Cancer Institute
NICoE	National Intrepid Center of Excellence
NIH	National Institutes of Health
OD	Office of the Director of the National Institutes of Health
ORD	Office of Research and Development
PA	Program Announcement
PI	Principal Investigator
PM&R	Department of Physical Medicine & Rehabilitation
PRORP	Peer Reviewed Orthopaedic Research Program
PRMRP	Peer Reviewed Medical Research Program
RR&D	VA Rehabilitation Research & Development
SBIR	Small Business Innovation Research
STTR	Small Business Technology Transfer
USAMMA	U.S. Army Medical Materiel Agency
USAMMDA	U.S. Army Medical Materiel Development Activity
USAMRAA	U.S. Army Medical Research Acquisition Activity
USAMRDC	U.S. Army Medical Research and Development Command
USU	Uniformed Services University of the Health Sciences
VA	U.S. Department of Veterans Affairs
WRAIR	Walter Reed Army Institute of Research

## Meeting Outcomes

### *Purpose*

The Stakeholders Meeting is an opportunity to engage orthopaedic research, clinical, and military experts, as well as those living with orthopaedic injuries, in an open-dialogue forum to identify knowledge and capability gaps that will help inform future research investment discussions.

### *Stakeholder Participants*

Representatives from orthopaedic non-profit organizations, academia, government institutions, industry, and the public are invited to share broad perspectives on which initiatives have the greatest potential to propel the science forward, break down potential barriers in research and patient outcomes, address key knowledge or scientific gaps, and identify potential approaches for the treatment of traumatic orthopaedic injuries.

### *Key Meeting Activities*

- Presentations from various federal funding organizations conducting or participating in orthopaedic research and care, to include discussion of concurrent management strategies for orthopaedic research endeavors.
- Focused breakout sessions to discuss current state of the science, desired future capabilities, and gaps in specific areas of orthopaedic research and care.

### *Outcomes*

- Prioritized gaps for orthopaedic research and care to inform programmatic direction and future program investment discussions.



## Overview: CDMRP History

The Congressionally Directed Medical Research Programs (CDMRP) is a global funding organization within the Department of Defense (DOD) U.S. Army Futures Command and within the U.S. Army Medical Research and Development Command (USAMRDC). The CDMRP responsibly manages research that discovers, develops, and delivers health care solutions for Service Members, Veterans, and the American public. The CDMRP originated in fiscal year 1992 (FY92) when the U.S. Congress first appropriated funds to the DOD for breast cancer research.

Since its first appropriation in FY92, the CDMRP has grown to 37 programs in FY21. The CDMRP implements the investment of congressionally directed dollars provided to fund groundbreaking, high-impact, meritorious research that targets critical gaps in health care. These funds are not requested by the DOD; they are added to the DOD budget by the U.S. Congress with specific research areas and guidance as defined by the congressional language. In addition, the CDMRP provides support as requested for the management of Defense Health Program core dollars directed at both intramural and extramural military medical research portfolio areas.

## Program Cycle

To ensure that each program's research portfolio reflects not only the most meritorious science but also the most programmatically relevant research the CDMRP developed a two-tier model based upon recommendations from a 1993 Institute of Medicine (IOM) report.<sup>1</sup> The IOM (now the National Academy of Medicine) recommended a two-step review procedure for research applications that was composed of a scientific peer review and a separate programmatic review (Figure 1). The scientific peer review is conducted by an external panel that is recruited specifically for each peer review session. Peer review involves the expertise of scientists, clinicians, military members, and consumers (patient advocates). Each application is judged on its own scientific and technical merit with respect to the described criteria in the funding opportunity solicitation. The second tier of review is conducted by a Programmatic Panel and includes discussions by experts in the field. These experts, which include scientists, clinicians, consumers, and members of the military, assess the applications based on the scientific peer review ratings and summaries, a balanced portfolio, programmatic intent, and scientific merit. Scientifically sound applications that best meet the program's interests and goals are recommended for funding by the Programmatic Panel. Once approval is received for the funding recommendations, awards are made and assigned to the Program team for full-cycle support of research and outcomes.

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<sup>1</sup> Institute of Medicine (US) Committee to Review the Department of Defense's Breast Cancer Research Program. A Review of the Department of Defense's Program for Breast Cancer Research. Washington (DC): National Academies Press (US); 1997. 1, Introduction. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK233671/>

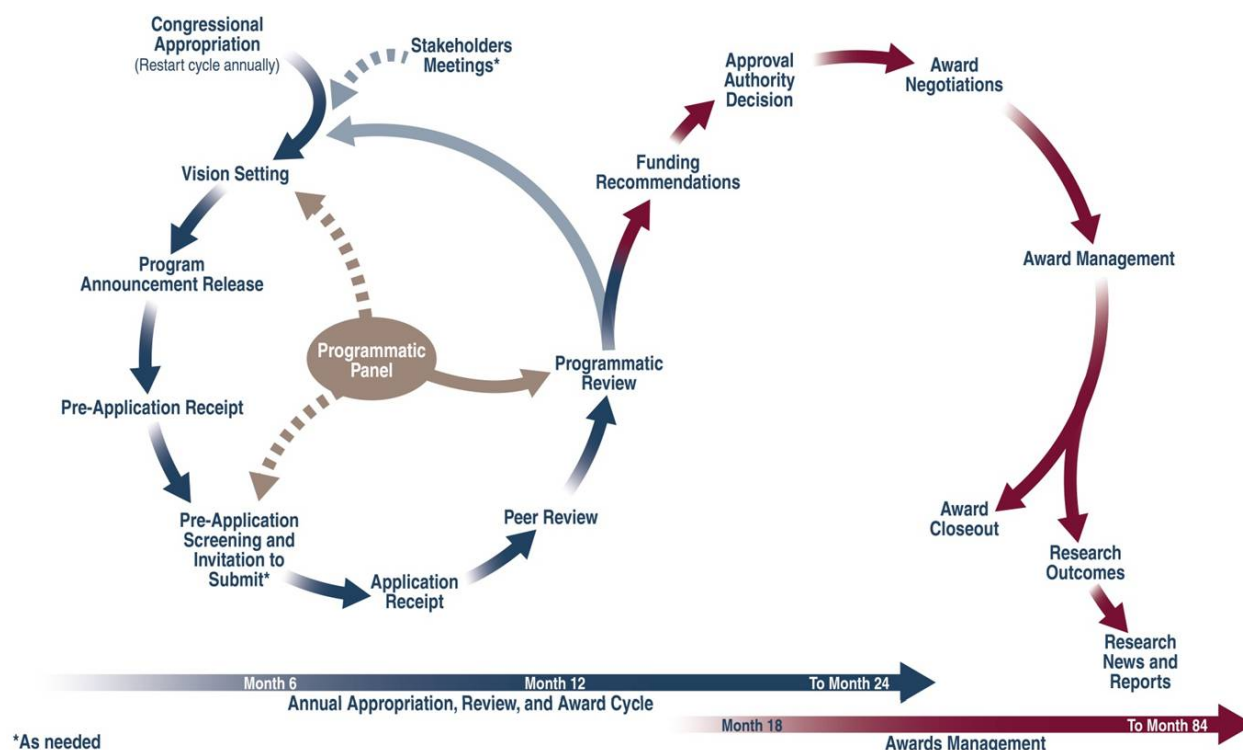


Figure 1. CDMRP Annual Program Cycle.

## Consumer Involvement

A unique hallmark of the CDMRP is the inclusion of consumers in our programmatic cycles. Consumers may be patients, survivors, family members, or caregivers of people living with a disease, injury, or condition funded by a CDMRP program. Consumer reviewers participate as full voting members in both peer review and programmatic review. Participation of consumers leads to an expanded perspective by both scientists and consumers. Consumers keep the needs of the consumer community at the forefront of scientific discussions and scientists are reminded of the human dimension of the disease/injury/condition. Consumer reviewers report greater understanding of the benefits and burdens imposed upon patients participating in research studies. They return home to their loved ones with hope for a cure, better treatment, or quality of life for those living with their illness generated by their participation and understanding of the focus of the research that may be funded. This results in increased consumer awareness of the importance of research and a stronger relationship between the scientific community and the consumer community.



## CDMRP Spectrum of Research

The CDMRP funds research across a wide spectrum of development, from initial concepts through clinical trials. The CDMRP also allows Principal Investigators (PIs) to be awarded at many stages in their careers, from trainees through established, senior researchers at a variety of institutions. The examples provided in Figure 2 are not prescriptive or exhaustive. Award mechanisms may be customized for a specific research program or created for a specific intent when necessary.

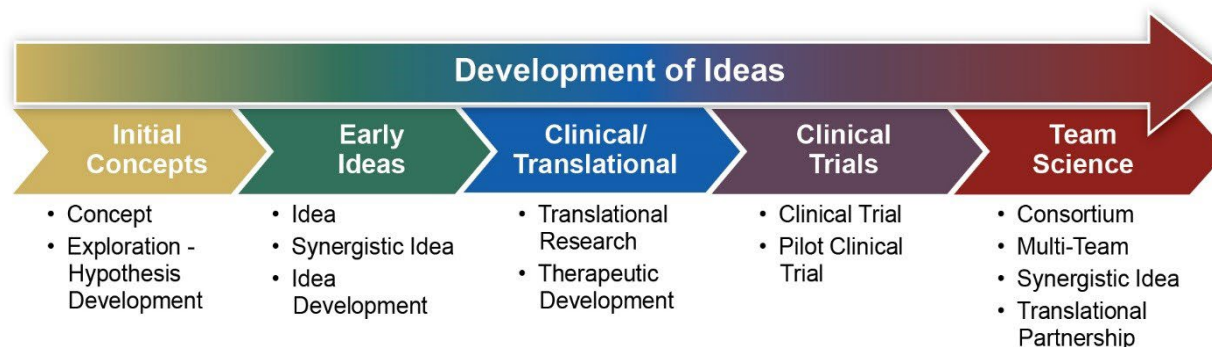


Figure 2. Examples of CDMRP Funding Opportunities and Maturity of Research.

## Overview: Peer Reviewed Orthopaedic Research Program Background

### History

The Peer Reviewed Orthopaedic Research Program (PRORP) was initiated in FY09 to provide support for research of exceptional scientific merit focused on optimizing recovery and restoration of function for military personnel with orthopaedic injuries sustained in combat or combat-related duties. The PRORP strives to address the most significant research gaps, and it is expected that any research findings would also provide benefit to the general population. The vision of PRORP is to provide all military Service Members with orthopaedic injuries the opportunity for optimal recovery and restoration of function. The vision is realized through the mission to address the most significant gaps in care for the leading burden of injury and for facilitating return to duty by funding innovative, high-impact, clinically relevant research to advance optimal treatment and rehabilitation from musculoskeletal injuries (MSKI) sustained during combat and combat-related activities.

### PRORP Congressional Language

With each appropriation, the U.S. Congress can provide guidance in the form of conference reports or explanatory statements to identify a program's scope and research areas for consideration. More detail regarding the scope of the PRORP is provided below.

## **PRORP Scope**

The PRORP was initiated in response to the number of combat injuries seen in theatre during recent conflicts, the majority of which were musculoskeletal in nature. Below are congressional language excerpts to illustrate the scope of the program.

### **FY09 Conference Report Language (House of Representatives Report 111-151)**

*The conference agreement provides \$51,000,000 for orthopedic and other trauma research, treatment and rehabilitation including regenerative medicine. This funding will continue and expand the existing orthopedic trauma research program, amputee rehabilitation and reset research, and restoration of function. Serious limb trauma, vascular injuries, major limb tissue damage, and blood flow disruption contribute heavily to United States military casualties in Iraq and Afghanistan. The Department of Defense estimates indicate that nearly two thirds of injuries sustained in combat in Iraq and Afghanistan are musculoskeletal. Extremity injuries are the most prevalent injury, and amputations following battlefield injury now occur at twice the rate as in past wars. Understanding how to treat and facilitate rapid recovery from orthopedic injuries should be one of the top priorities for the Military Health System.*

### **FY16 HAC-D Report Language**

*The Committee recommends \$30,000,000 for the peer-reviewed orthopedic research program. The Committee is aware that many of the injuries sustained by Service Members in combat include multiple limb trauma and are often distinct from trauma typically seen in the civilian environment, thus requiring a unique solution set. The Committee encourages the Assistant Secretary of Defense (Health Affairs) to support research at the intersection of bioengineering, neuroscience, and rehabilitation to support neural interfaces to peripheral nerves and advanced prosthetics that deliver more functionality to amputees.*

The program was initiated with an investment of \$112 million (M) from two appropriations acts: \$61M from the Consolidated Security, Disaster Assistance, and Continuing Appropriation Act, and \$51M from the Supplemental Appropriations Act.<sup>2</sup> Since FY09, a total of \$458.5M has been appropriated to the program by Congress. Between FY09 and FY19, of the 1,370 applications received, the program made 294 awards (Figure 3).

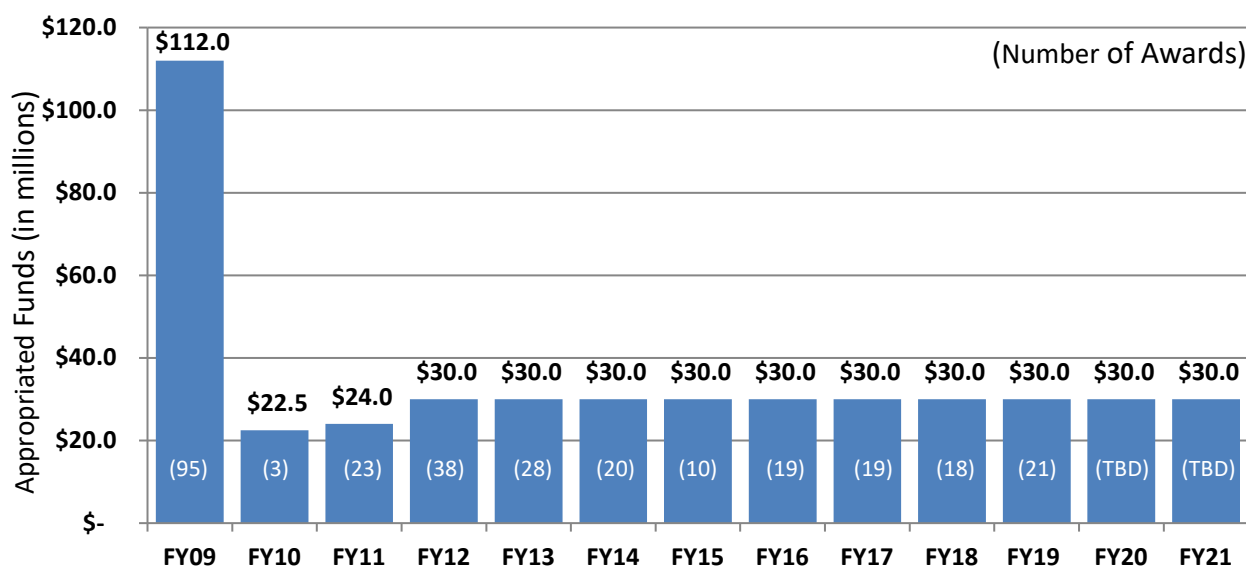


Figure 3. Congressional Appropriations to the PRORP by Fiscal Year, FY09-FY21.

<sup>2</sup> 1Congressionally Directed Medical Research Programs Annual Report 2009.  
<https://cdmrp.army.mil/pubs/annreports/2009annrep/2009annreport.pdf>

## PRORP Funding Snapshot

Due to the nature and field of research, the PRORP has had the opportunity to fund projects along the continuum of care from bench to bedside. Within the last five years, the PRORP has released the Applied Research Award (ARA) to develop focused research, the Expansion Award (EA) for translational research, and has offered the Clinical Translational Research Award (CTRA), Clinical Trial Award (CTA), and the Integrated Clinical Trial Award (ICTA) to fund clinical research. Between FY16 and FY19, a total of 77 awards were made with 52% falling within the developing bucket (red), 17% addressing translational topics (green), and 31% in clinical research (blue) (Figure 4).

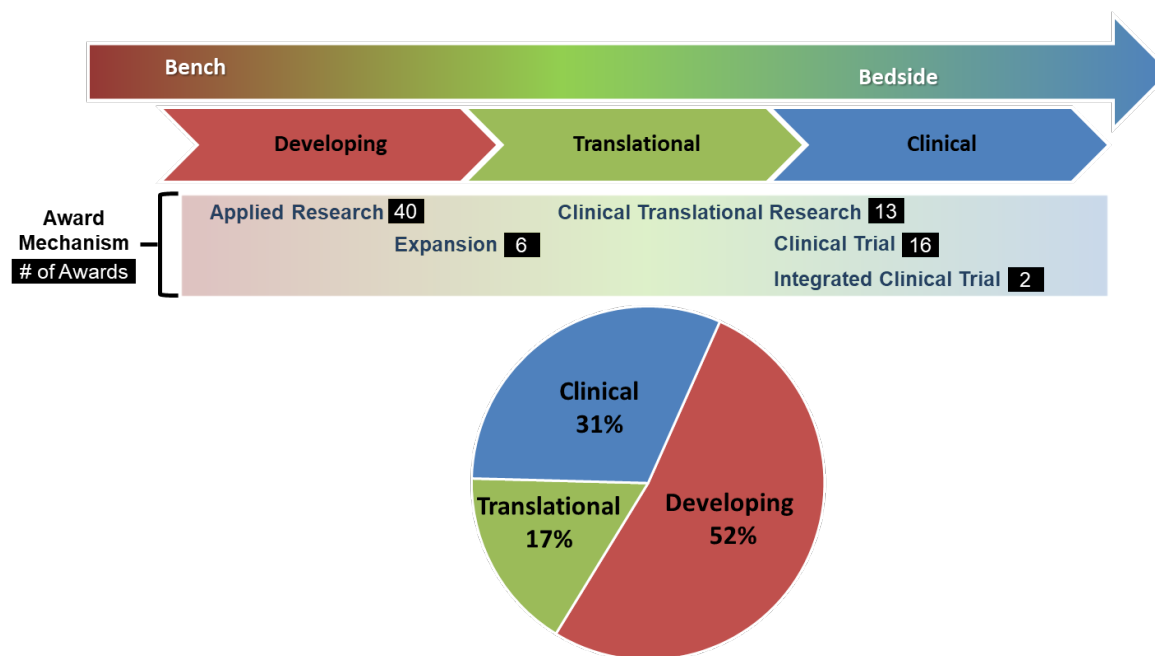


Figure 4. PRORP Investment Strategy by Research Stage and Award Mechanism, FY16-FY19.

## PRORP Investment

In terms of scientific area, the largest proportion of awards funded (67%) from FY16 through FY19 addressed clinical and experimental therapeutics (Figure 5). In terms of PRORP portfolio buckets, 40.3% of the awards made between FY16 and FY19 align to the prevention and treatment of complications portfolio (Figure 6). Additionally, 23.4%, 13.0%, and 11.7% of the awards made during this time span fall into the tissue engineering and repair, prosthetics and orthotics, and rehabilitation and biomechanics portfolios, respectively.

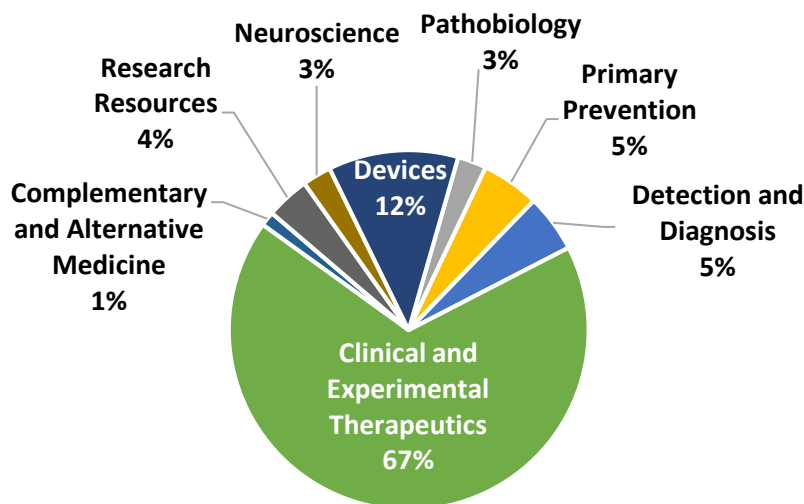


Figure 5. PRORP Investment by Scientific Area, FY16-FY19.

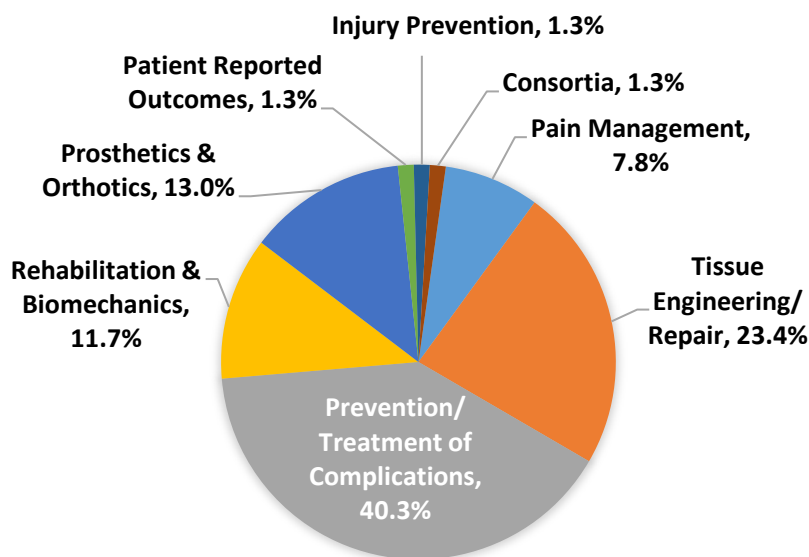


Figure 6. PRORP Investment by Portfolio Bucket, FY16-FY19.

## FY21 PRORP Focus Areas

The FY21 Defense Appropriations Act provides funding to the Department of Defense PRORP to support high-impact, clinically relevant research to advance optimal treatment and rehabilitation from MSKI.

For FY21, the PRORP released three program announcements (PAs): Applied Research Award, Clinical Translational Research Award, and Clinical Trial Award. The **ARA** supports applied research applications focused on advancing optimal treatment and restoration of function for military personnel with MSKI sustained during combat or combat-related activities. The **CTRA** supports high-impact and/or emerging research that may or may not be ready for a full-scale, randomized, controlled clinical trial. The **CTA** supports rapid implementation of clinical trials with the potential to have a major impact on military combat-related orthopaedic injuries or non-battle injuries that significantly impact unit readiness and return-to-duty/work rates.

Applications submitted to the FY21 PRORP must address one or more of the following Focus Areas:

- **Compartment Syndrome:** Novel treatment strategies to improve current diagnoses for compartment syndrome. Alternatives to intracompartmental pressure measurements are encouraged.
- **Limb Stabilization and Protection:** Development of rapid limb stabilization and novel wound protectants for severely or critically wounded limbs to enable prolonged care and eventual transport to the point of definitive treatment.
- **Osseointegration:** Identification of best practices to address infection, rejection, and/or failure of percutaneous osseointegrated prosthetic limbs.
- **Prosthetic and Orthotic Devices:** Development of high-performance novel prosthetic or orthotic devices designed to enhance whole person performance and decrease pain in patients with amputation and limb salvage, and impairment. Multicenter studies that focus on transfemoral amputees are encouraged.
- **Retention Strategies:** Development, optimization, and/or validation of battlefield-feasible diagnostic capabilities, decision support tools, interventions, and/or rehabilitation strategies that can facilitate retention on duty for common combat-related MSKI. Biomarker studies are excluded. The current standard of care must be noted. The rehabilitation strategy to be used in the proposed study must be specified, as applicable.
  - *Battlefield Care:* Strategies that can be utilized at or near the point of injury to allow an injured Service Member to remain on the battlefield or on mission without the need for evacuation. Treatment strategies that allow return to mission effectiveness within 30 days will be considered.



- *Return to Duty:* Treatment strategies that can be utilized along the continuum of care and enable return to duty of the Service member within one year of injury.
- **Tissue Regeneration Therapeutics:** Development of advanced tissue regeneration therapeutics in nerve, muscle, and/or composite tissue for the restoration of traumatically injured extremities. Isolated bone or cartilage tissue engineering studies are excluded. Early clinical feasibility studies involving volumetric muscle loss are encouraged.
- **Translation of Early Findings:** Translation of early research findings in the orthopaedic surgical care topic areas listed below to move the research toward clinical trials and clinical practice.
  - *Soft Tissue Trauma:* Strategies to develop and/or identify musculoskeletal extremity soft tissue trauma treatments for shoulder, knee, or chronic ankle instability and sequela *only*, to optimize return to duty, work, or reintegration.
  - *Fracture-Related Infection:* Strategies to decrease the burden of fracture-related infections (may include prevention, early detection, or improved eradication). Alternatives to systemic antibiotic delivery are encouraged. Novel approaches that improve the current standard of treatment to prevent fracture-related infections are encouraged.

## Guidelines for Discussion

- Everyone participate; no one dominate
- Listen to understand
- Use “I” statements
- One speaker at a time
- Disagree without being disagreeable
- Share your unique perspective
- Stay open to new ways of doing things
- All ideas are valid
- Critique ideas, not people
- Respect each other’s thinking and value their contributions
- Treat everything you hear as an opportunity to learn and grow
- Staying on schedule is everyone’s responsibility; honor time limits
- State your “headline” first, then the supporting information as necessary
- Be brief and meaningful when voicing your opinion
- Listen with care instead of “building your story”
- Participate 100%
- Seek common ground and understanding (not problems and conflict)
- Stay out of the weeds

## Tips for Teleconferences/Virtual Meetings

- Always introduce yourself prior to speaking
- Use mute when not speaking
- Utilize chat for technical support when available

## PRORP FY21 Stakeholders' Data Collection Instrument (*verbatim text*)

The PRORP was initiated in 2009 to provide support for research focused on optimizing recovery and restoration of function for the most significant gaps in care for the leading burden of injury and for facilitating return to duty. Research outcomes of funded efforts are expected to benefit Service Members, Veterans, and the general population. Congressional appropriations for the PRORP from FY09 through FY21 totaled \$458.5 million.

The CDMRP will hold a Stakeholders Meeting for the PRORP, where experts from different subject areas are brought together to identify knowledge gaps, outcomes, and product needs for improving care and options for patients who have sustained traumatic musculoskeletal injuries. To expedite the process, the CDMRP is currently soliciting information on the identification of knowledge gaps, outcomes, and product needs in orthopaedic research and clinical care:

Question 1. Which of the following topic areas need more research investment and, if funded, could make a significant impact on orthopaedic research and clinical outcomes? (Please choose one)

- Diagnosis and acute care of prehospital musculoskeletal trauma injuries in military and civilian populations
- Care for return to duty (within 1 year of injury) for military Service Members
- Knowledge gaps in surgical care for musculoskeletal combat casualties
- Knowledge gaps in surgical care for musculoskeletal non-combat casualties
- Emerging areas in preclinical and clinical orthopaedic research

Question 2. Based on your response to the above, what are the top three knowledge or capability gaps, outcomes, and product needs for this topic area? (Please provide three responses)

- Gap 1: \_\_\_\_\_
- Gap 2: \_\_\_\_\_
- Gap 3: \_\_\_\_\_

Question 3. Which of the following best describes your role in the orthopaedic research/patient community? (Please choose one)

- |                              |                                 |
|------------------------------|---------------------------------|
| • Orthopaedic/Trauma Surgeon | • Industry                      |
| • Rehabilitation Clinician   | • Patient/Advocate              |
| • Academia                   | • Foundation/Government Program |
| • Other (please specify)     | Administrator                   |

Question 4. If you would like to be contacted regarding participation at the upcoming virtual FY21 PRORP Stakeholders Meeting (tentatively planned for September 2021), please provide your name, organization, email address, and phone number. The attendee

list will be balanced across disciplines, as appropriate, to facilitate discussion. The CDMRP may not be able to accommodate all interested respondents.

Name: \_\_\_\_\_

Organization: \_\_\_\_\_

Email Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_

## Results and Analysis of Stakeholders' Data Collection Instrument<sup>3</sup>

The PRORP data collection instrument was sent via email, and communicated to subscribers of PRORP, Peer Reviewed Medical Research Program (PRMRP), and Defense Medical Research and Development Program (DMRDP) communications via the electronic Biomedical Research Application portal (eBRAP). A total of 279 responses were received, tabulated, and categorized; final results are depicted below.

Question 1. Which of the following topic areas need more research investment and, if funded, could make a significant impact on orthopaedic research and clinical outcomes? (Please choose one)

The distribution of the responses is presented below (Figure 7). Emerging areas in preclinical and clinical orthopaedic research (43%) was the most commonly selected topic area, followed by care for return to duty (within 1 year of injury) for military Service Members (22.2%), and diagnosis and acute care of prehospital musculoskeletal trauma injuries in military and civilian populations (14.7%). Knowledge gaps in surgical care for musculoskeletal non-combat (10.8%) and combat (9.3%) casualties were the least selected topic areas.

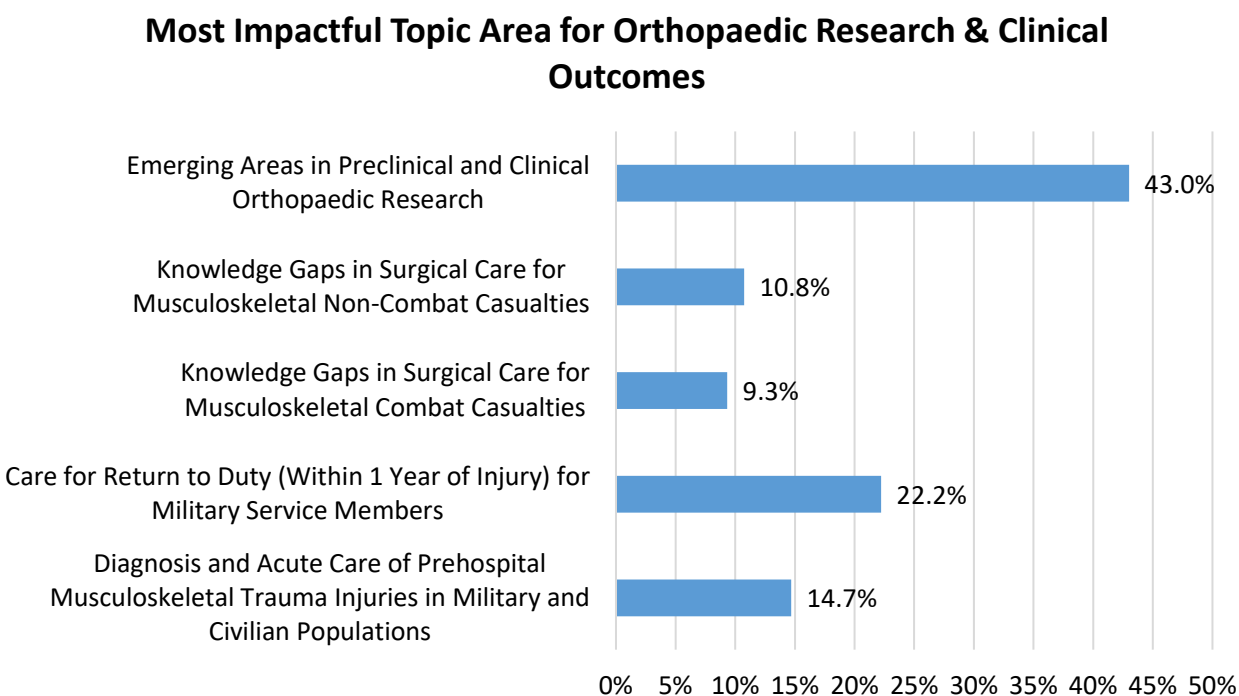


Figure 7. Percentage of Responses Indicating Topic Areas in Need of More Research Investment.

<sup>3</sup> Responses compiled from the pre-Stakeholders Meeting Data Collection Instrument sent to PRORP researchers, clinicians, and advocates prior to the meeting.

Question 2. Based on your response to the above, what are the top three knowledge or capability gaps, outcomes, and product needs for this topic area? (Please provide three responses)

The distribution of the responses is presented below (Figure 8). A listing of all responses categorized by topic area will be provided to the Breakout Session Leaders to help facilitate discussion.

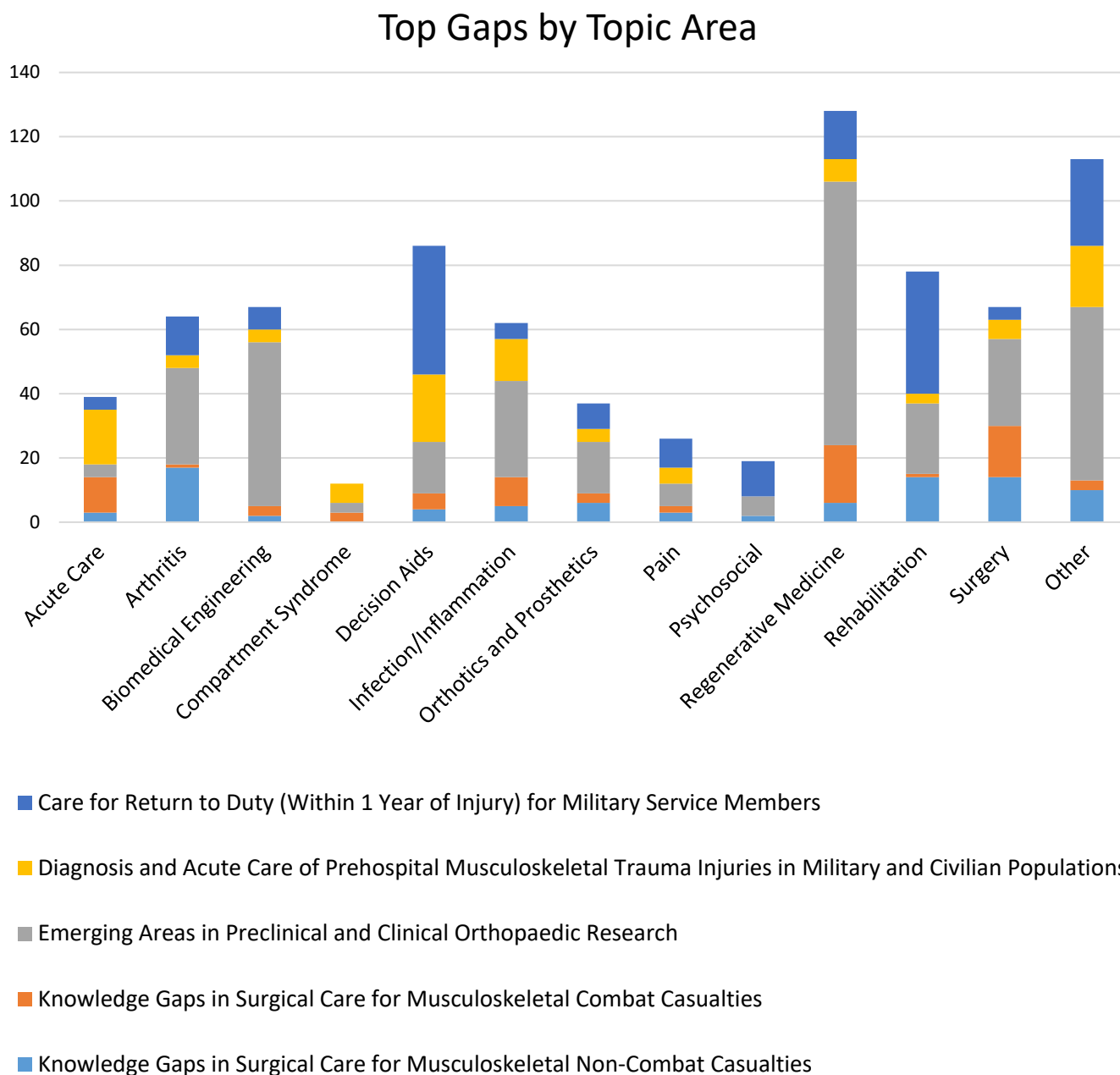


Figure 8. Distribution of Survey Respondent-Identified Gaps by Portfolio and Topic Area.



Question 3. Which of the following best describes your role in the orthopaedic research/patient community? (Please choose one)

- Orthopaedic/Trauma Surgeon
- Rehabilitation Clinician
- Academia
- Other (please specify)
- Industry
- Patient/Advocate
- Foundation/Government Program Administrator

The distribution of responses is presented below (Figure 9). Academia (52%) was the most commonly selected response, followed by Orthopaedic/Trauma Surgeon (17.9%), Other (14%), Industry (6.8%), Rehabilitation Clinician (5.4%) and Foundation/Government Program Administrator (3.2%). Patient/Advocate (0.7%) was the least selected response.

### Demographic Profile of Respondents

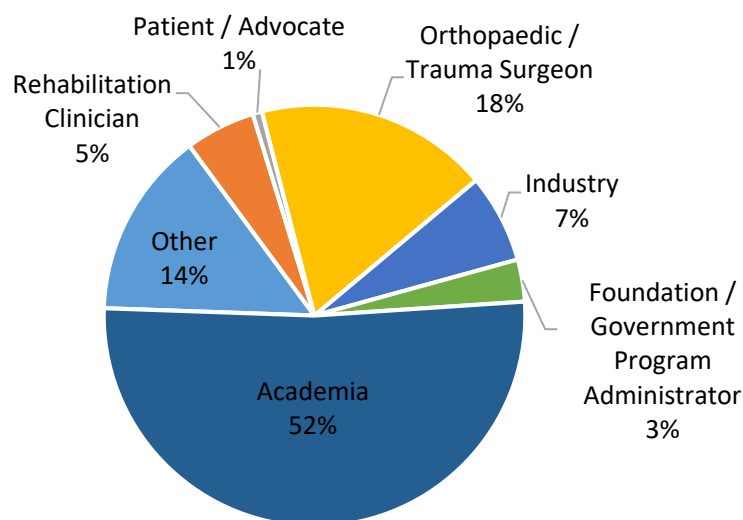


Figure 9. Survey Responder's Role in the Orthopaedic Research or Patient Community, by Percent.

## Resources

- CDMRP: <https://cdmrp.army.mil/>
- Defense Health Agency (DHA) JPCs: <https://health.mil/About-MHS/OASDHA/Defense-Health-Agency/Research-and-Development/Joint-Program-Committees>
- DHA Research and Development (J9): <https://www.health.mil/About-MHS/OASDHA/Defense-Health-Agency/Research-and-Development>
- eBRAP: <https://ebrap.org/eBRAP/public/index.htm>
- Grants.gov: <https://www.grants.gov/>
- U.S. Army Medical Materiel Agency (USAMMA): <https://www.amlc.army.mil/USAMMA/>
- U.S. Army Medical Materiel Development Activity (USAMMDA): <https://www.usammda.army.mil/>
- U.S. Army Medical Research Acquisition Activity (USAMRAA): <https://www.usamraa.army.mil/Pages/Main01.aspx>
- U.S. Army Medical Research and Development Command (USAMRDC): <https://mrdc.amedd.army.mil/>

## Presenters and Breakout Session Leaders

<b>Brian Schulz, PhD</b> Veterans Affairs	Presenter
<b>Richard Shoge, PhD</b> Military Operational Medicine Research Program	Presenter
<b>Chuck Washabaugh, PhD</b> National Institutes of Health/National Institute for Arthritis Musculoskeletal and Skin Disorders	Presenter
<b>Therese West, DNP, APN-BC</b> Combat Casualty Care Research Program	Presenter
<b>Jessica Goetz, PhD</b> University of Iowa	Breakout Session 1 Leader
<b>James Irrgang, PT, PhD</b> University of Pittsburgh	Breakout Session 1 Leader
<b>Constance Chu, MD</b> Stanford University	Breakout Session 2 Leader
<b>Aksone Nouvong, DPM</b> University of California, Los Angeles	Breakout Session 2 Leader
<b>Stephen Goldman, PhD</b> Extremity Trauma and Amputation Center of Excellence	Breakout Session 3 Leader
<b>Leon Nesti, COL, MD, PhD</b> Uniformed Services University of the Health Sciences	Breakout Session 3 Leader
<b>Luis Alvarez, PhD</b> Theradaptive	Breakout Session 4 Leader
<b>Mike Hahn, PhD</b> University of Oregon	Breakout Session 4 Leader
<b>Robert O'Toole, MD</b> University of Maryland School of Medicine	Breakout Session 5 Leader
<b>Jessica Rivera, MD, PhD</b> Louisiana State University Health Science Center	Breakout Session 5 Leader
<b>Jon Dickens, LTC, MD</b> Walter Reed National Military Medical Center	Breakout Session 6 Leader
<b>I. Leah Gitajn, MD, MS</b> Dartmouth-Hitchcock Medical Center	Breakout Session 6 Leader