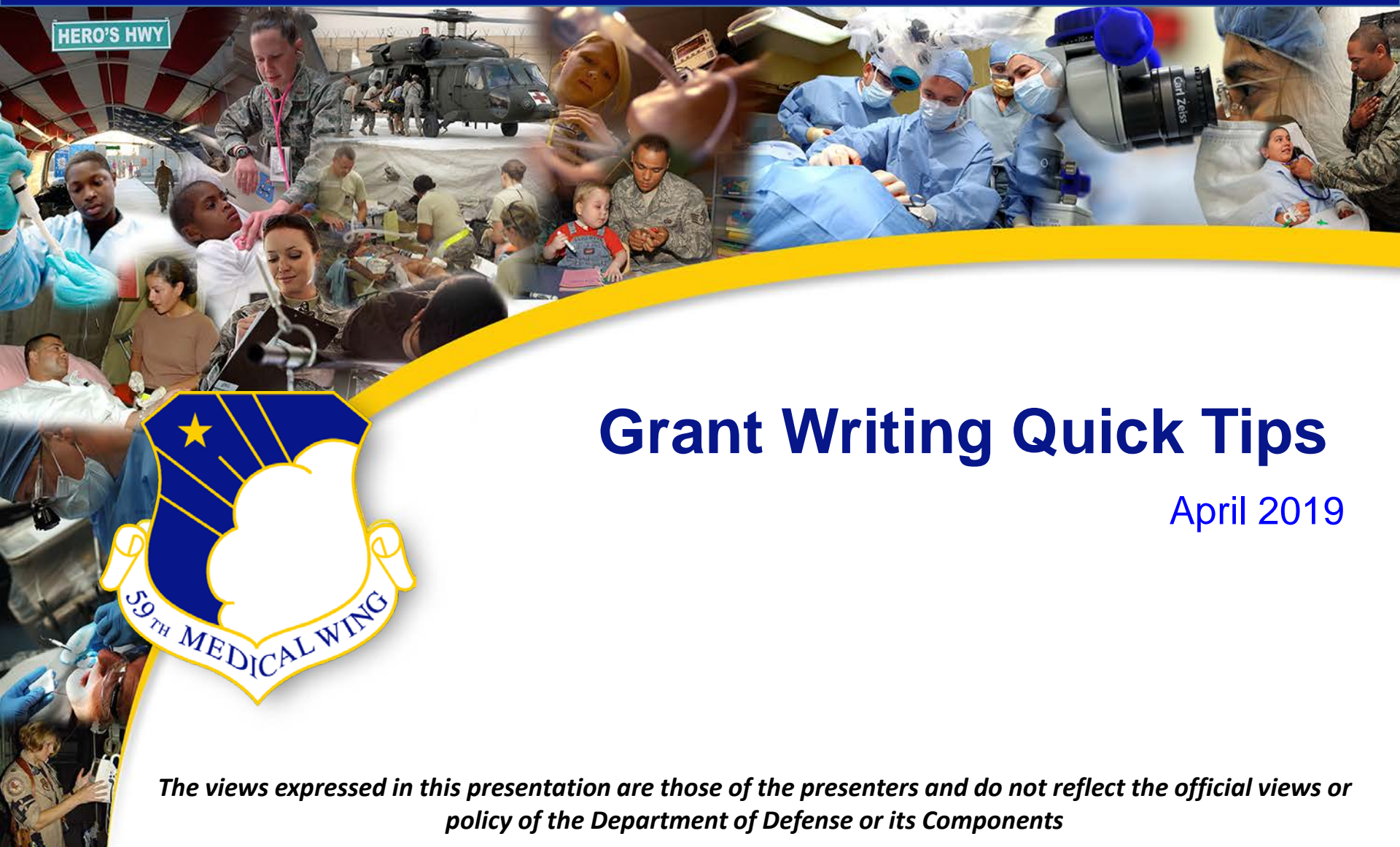




# 59th Medical Wing



## Grant Writing Quick Tips

April 2019

*The views expressed in this presentation are those of the presenters and do not reflect the official views or policy of the Department of Defense or its Components*

**PEOPLE**

**MISSION**

**INNOVATION**



# Disclaimer



**Warrior Medics – Mission Ready – Patient Focused**

The views expressed are those of the presenter and do not reflect the official views or policy of the Department of Defense or its Components



# Components of a Successful Grant



Warrior Medics – Mission Ready – Patient Focused



Grant writing is an important part of your professional growth strategy. It should become a long-range plan for your professional growth and development:

- Build individual credentials
- Build a track record of funding
- Work on teams with more experienced researchers
- Develop a plan for long-range, personal development

**PEOPLE**

**MISSION**

**INNOVATION**



# Components of a Successful Grant



Warrior Medics – Mission Ready – Patient Focused

## Planning Your Project

*Start with your great idea*



**Translate it into a project**

- What will your outputs be?
- How long will it take?
- What will your approach be?
- What have you done so far?
- How will the outcomes advance DoD program goals and DoD mission?

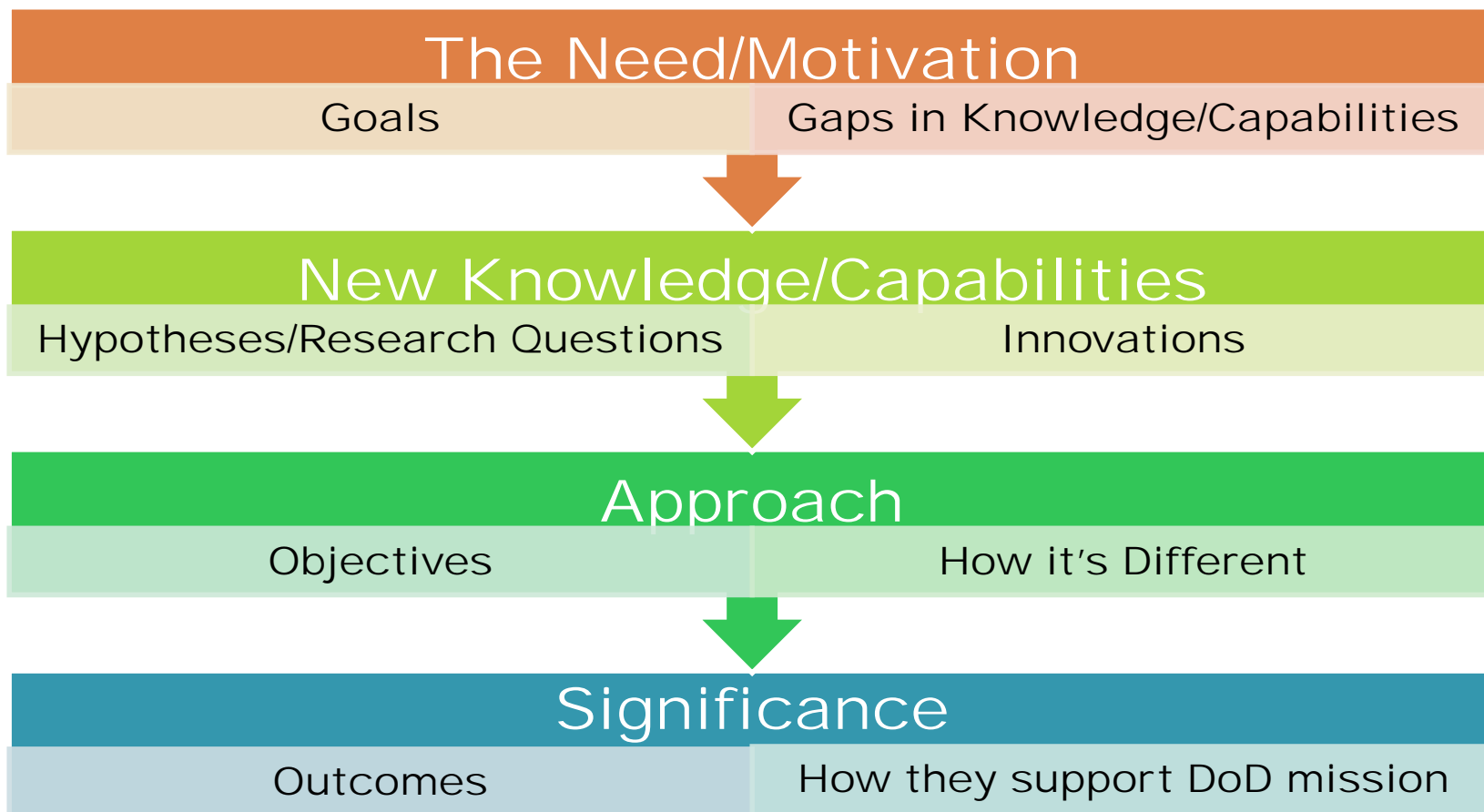


# Components of a Successful Grant



Warrior Medics – Mission Ready – Patient Focused

## Transition Clinical Needs to Viable Research Questions



**PEOPLE**

**MISSION**

**INNOVATION**



# Components of a Successful Grant



Warrior Medics – Mission Ready – Patient Focused

## Match Your Question to Funding Calls

What are you looking for?

- Funding Source ( AF, joint, civilian)
- Appropriate Funding Opportunities (intramural vs extramural)
- Relevant Program Announcements
- Type of Funding to Seek: 6.1, 6.2, or 6.3



# Components of a Successful Grant



Warrior Medics – Mission Ready – Patient Focused



**CDMRP**

Transforming Healthcare through Innovative and Impactful Research

Home Research Programs ▾ Funding Opportunities ▾ Consumers ▾ Search Awards & Publications About Us ▾

Search...

Submit

Home / Funding Opportunities / Synopsis of Current Program Funding Opportunities

## Funding Opportunities



### Synopsis of Current Program Funding Opportunities

- Alcohol and Substance Abuse Disorders
- Amyotrophic Lateral Sclerosis
- Autism
- Breast Cancer
- Defense Medical Research and Development Program
  - Combat Casualty Care Research Program (JPC-6)
- Lung Cancer
- Military Burn
- Neurofibromatosis
- Ovarian Cancer
- Parkinson's
- Peer Reviewed Cancer
- Peer Reviewed Medical
- Tick-Borne Disease
- Tuberous Sclerosis Complex

**SBIR · STTR**  
America's Seed Fund™  
POWERED BY SBA

Login/Register Contact Us Search

Home Links ▾ About ▾ Funding ▾ Awards ▾ News ▾ Events ▾ Tutorials ▾ Resources ▾

Home / Funding / Solicitation Listing

### Open

**!** NOTE: The Solicitations and topics listed on this site are copies from the various SBIR agency solicitations and are not necessarily the latest and most up-to-date. For this reason, you should visit the respective agency SBIR sites to read the official version of the solicitations and download the appropriate forms and rules.

Open Future Closed

Solicitation	Agency	Program	Due Date	Close Date
NIST FY 2019 SBIR Program Phase I Notice of Funding Opportunity (NOFO)	DOC	SBIR	04/18/2019	04/19/2019
FY19 DOT SBIR Solicitation	DOT	SBIR	04/22/2019	04/22/2019
Navy- Accelerated Delivery and Acquisition of Prototype Technologies (ADAPT)	DOD	SBIR	05/13/2019	05/13/2019
NSF SBIR Phase I (June 2019)	NSF	SBIR	06/13/2019	06/13/2019
NSF STTR Phase I (June 2019)	NSF	STTR	06/13/2019	06/13/2019
HHS Funding Opportunities	HHS	BOTH	n/a	MULTIPLE

**PEOPLE**

**MISSION**

**INNOVATION**



# Components of a Successful Grant



Warrior Medics – Mission Ready – Patient Focused

## Approach to Grant Writing

- **FOLLOW DIRECTIONS CAREFULLY!**
- Meet your deadline; be prepared to submit 2 days prior (don't forget to route internally)
- If you are going to need letters of support, start working on those TODAY
- Excessive length; sometimes more is not better, it is simply more





# Components of a Successful Grant



Warrior Medics – Mission Ready – Patient Focused

## Grant Proposal Planning

**Most Funding Calls will require 12 critical elements:**

1. Abstract
2. Background
3. Military Relevance
4. Technical Program Summary/Methods
5. References
6. Milestones/Deliverables
7. Facilities/Equipment/Experience
8. Subcontracts
9. Cost proposal
10. Biosketch of Investigator and Co-Investigator
11. Letter of support
12. Quad Chart

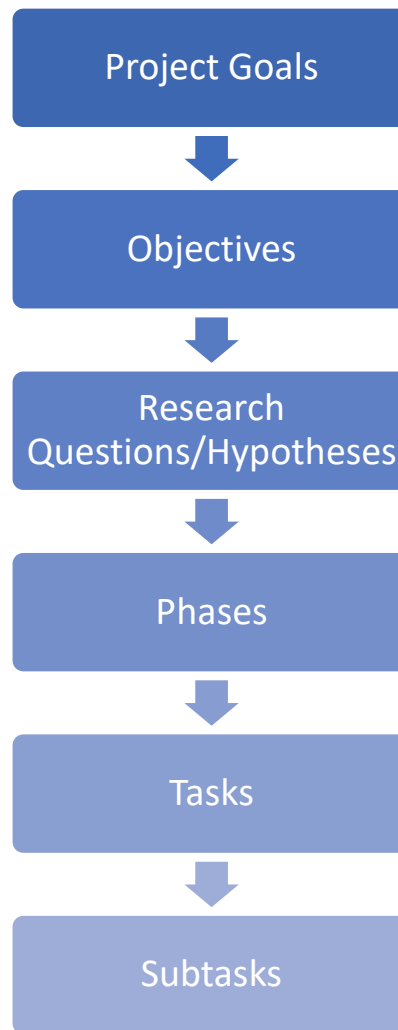


# Components of a Successful Grant



Warrior Medics – Mission Ready – Patient Focused

**Have A Clear  
Structure**





# A Path to Funding



Warrior Medics – Mission Ready – Patient Focused

*White Paper or Pre-Proposal*

← 2-3 pages; depends on call;  
needs overall budget estimate



**Review**

Denial



Invitation to Write Full Proposal



**Full Proposal**



**Review**

Denial



Receive  
Questions/Comments from  
Reviewers



**Improved Full Proposal**



**Acceptance of Proposal Letter!**

Denial



**Congrats**

Request Comments  
from Reviewers



**Funded Proposal**

**PEOPLE**

**MISSION**

**INNOVATION**



# Example of a Successful Grants



Warrior Medics – Mission Ready – Patient Focused

## DOD Sample Phase II Proposal

ADVANCED DEVELOPMENT OF NEXT ACTUATORS FOR HUMAN SENSORY FEEDBACK ←

Well-rounded,  
Short Title

TOPIC NUMBER: A92-023A

PROPOSAL TITLE: ADVANCED DEVELOPMENT OF NEXT ACTUATORS FOR HUMAN SENSORY FEEDBACK FIRM NAME: TECHNICAL RESEARCH ASSOCIATES, INC.

### ABSTRACT Concise Abstract

The development of actuators with enhanced capabilities is critical to the achievement of sensory feedback systems for intuitive, real time human operations of telerobotic systems. The objective of this research project is to continue development of new actuators using active materials which will enhance the capabilities of dexterous, exoskeletal feedback systems for telerobotic applications. In Phase I, feasibility of novel Terfenol-D driven actuators was demonstrated. The new actuators are efficient, responsive, small and exert relatively high forces. The actuators provide proportional forces and are easily interfaced with digital electronics because of low voltage requirements. Phase II will pursue advanced development of proportional force resist ive brake actuators and active linear actuators. The actuator designs will be optimized, fabricated and integrated into a digitally controllable exoskeleton demonstration test bed.

Commercial, small, light weight, responsive actuators could find application by military and commercial entities for telerobotic applications. The completed devices could also be used as actuators in a number of automated mechanical systems found in home , office and industrial environments.

### KEYWORDS: General vs specific

Actuators, Robotics, Exoskeleton, Active Materials, Terfenol-D, Force Feedback, Magnetostrictive

(The sections above are on the Cover Sheet)



# Example of a Successful Grants



Warrior Medics – Mission Ready – Patient Focused

## Technical Objectives

Overall Objectives are clear

The objective of this project is to develop improved actuators for use in force feedback anthropologic master hands for the control of slave robot actuators and for other applications. This problem has been studied by others, however no adequate solution has been perfected. Based upon the findings and success of Phase I, we propose to develop actuators based on the newly available magnetorestrictive material Terfenol D. By necessity, we will have to concern ourselves with sensors and exoskeleton design in order to functionally test the new actuators. The following is a summary of the Key Tasks planned for Phase II.

## TASK 1. System Review

Tasks are precise

Will refine specific end product requirements desirable to successfully carry this development through to Phase II commercial application.

## TASK 2. Resistive Actuator Development

Will consider various alternative designs for resistive type actuators that are capable of meeting the task I specifications. One or more specific device(s) will be designed produced and operational specifications verified.

## TASK 3. Linear Motor Development

Will be devoted to the design construction and calibration of an active actuator of the linear motor type and possibly of a of a Hybrid programmable actuator.

## TASK 4. Application Simulation

The objective of Task 4 is to provide computer controlled simulation and exoskeleton test platforms for the calibration and functional testing of the actuators developed in task 2 and 3.

## TASK 5. Documentation

Will produce the final report and other documentation. This documentation should specify the new actuators



# Example of a Successful Grants



Warrior Medics – Mission Ready – Patient Focused

## Commercialization Strategy

### The Goal

Small, light weight, fast, high force, feedback controllable actuators could find wide application by both military and commercial entities for telerobotics applications. The completed devices could also be used as actuators in a great number of automate d mechanical systems found in office, home and factory environments. Products could include: actuators, simulation software, compact brakes, active vibration control modules, tactile devices, robotics controls, digitally controllable springs, active exos keletons, linear motors, digitally controlled clutches and dash pots etc.

## Key Personnel

### Who is doing what and are they qualified

The technical personnel at TRA form an innovative team with broad scientific and engineering backgrounds. The interchange of ideas necessary for problem solving occurs frequently and spontaneously. The personnel for this project are well suited to develop the new actuators using smart materials and to cope with problems that may arise during the project.

**PEOPLE**

**MISSION**

**INNOVATION**



# CDMRP Pre-Proposal Template



Warrior Medics – Mission Ready – Patient Focused

Tab 1 – Application Information

Tab 2 – Application Contacts

Tab 3 – Collaborators and Key Personnel

Tab 4 – Conflicts of Interest

Tab 5 – Pre-application Files

Preproposal Narrative (four page limit)

Topic Area, Research Idea, Research Strategy,  
Impact, Relevance to Military Health

Supporting Documentation: References, List of  
Abbreviations, Acronyms & Symbols, Biosketches

Tab 6 – Submit Preproposal

**Follow the Format!**



# Example of a Successful Grants



Warrior Medics – Mission Ready – Patient Focused

## Write a Compelling White Paper

- Focus on the outcomes and benefits of your research **to the funder**
- Describe the problem clearly
- Place your research in context of the state of the art
- Explain why your approach is different
- Provide a concise overview of what you will do
  - **Not “We will explore phenomenon x” – too vague**
  - **Instead, “In Task 1 we will measure x; in Task 2 we will develop y; in Task 3 we will evaluate z...”**





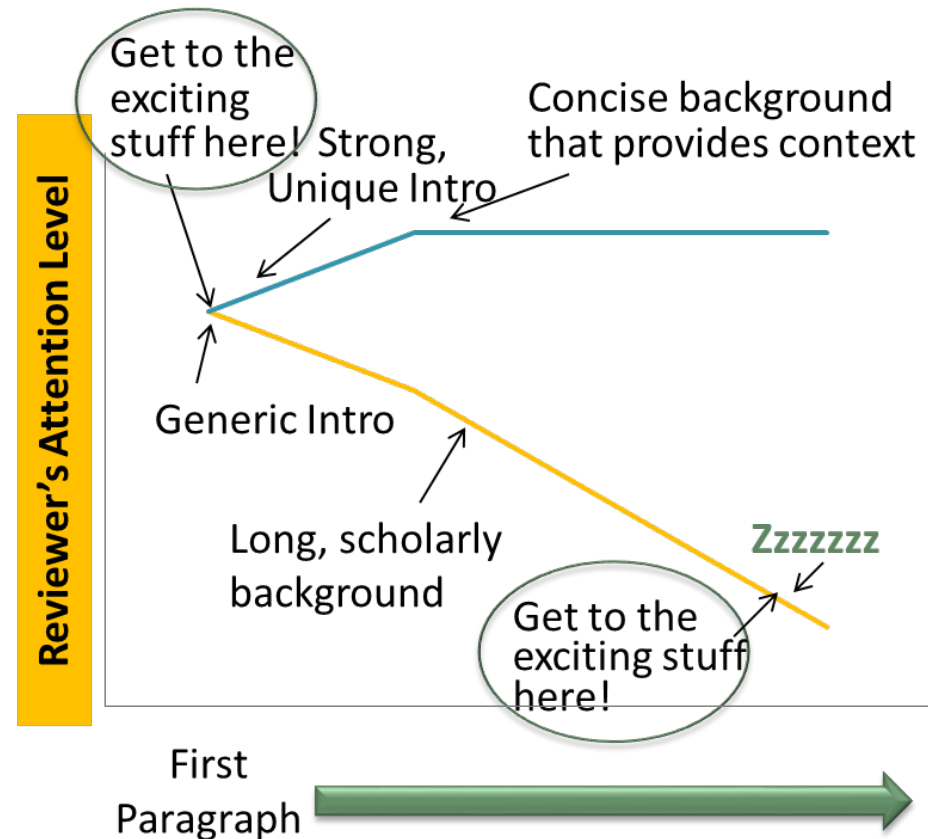
# Example of a Successful Grants



Warrior Medics – Mission Ready – Patient Focused

## Common Mistakes to Avoid

- Keeping Reviewer Attention
- Failure to connect research to outcomes of interest to DoD
- Long, wordy academic introduction
- Vague plan
- Unclear outcomes and deliverables





# Are You Making the Grade?



Warrior Medics – Mission Ready – Patient Focused

## Grant Grading 101

### Reviewer 1<sup>st</sup> Impression

- **Did the Applicant Follow Directions?**
- **Are Specific Aims and Objectives Clear?**
- **Is the Technical Approach Feasible?**

### Causes for Rejection

- **Missed Deadline**
- **Sections Missing**
- **Page Limit Exceeded**



# Budgets and Planning - Grants



Warrior Medics – Mission Ready – Patient Focused

## Budgets

**Knowledge of expenses associated with running a program is fundamental. Without this understanding grant writers will not be able to comprehend how much funds are needed to achieve the goals and objectives set for a program.**

- Do Not Reuse Quotes – prices fluctuate and can impact completion of your study
- Consult with Support Entities (animal and laboratory support for appropriate costing)
- Obtain ordering/shipping information for hard to obtain items (international orders, etc.)



# Be Aware of Timeline Challenges



Warrior Medics – Mission Ready – Patient Focused

- **Contract Actions**

- Personnel
- Direct Costs/Equipment

- **Agreements**

- CRADA
- MTA
- MOU/MOA

- **Regulatory Requirements**

- IRB
- IACUC
- FDA - IND/510K

- **Organizational**

- Accounting
- Fiscal Year Rollover

- **Career**

- PCA/PCS
- Deployment

- **Logistics**

- Getting Equipment  
Delivered in a  
Timely Fashion



# 59<sup>th</sup> Medical Wing



Warrior Medics – Mission Ready – Patient Focused

## A Closer Look at Writing

**PEOPLE**

**MISSION**

**INNOVATION**



# 7 Main Proposal Sections Defined



Warrior Medics – Mission Ready – Patient Focused

- 1. Title:** A statement that reflects the centrality of the proposed work.
- 2. Abstract:** A miniature version of the proposal. Concise. Summary of what, why, and how.
- 3. Background or Introduction:** Findings that led you to propose this work.
- 4. Hypothesis, Objectives:** Statements of possible conceptual or mechanistic explanation for a set of findings
- 5. Overall Goal, Long-term Goal:** Descriptive statements of what you plan to achieve and would like to achieve in the future
- 6. Research Approach, Plan, Strategy:** Conceptual and experimental approaches to carry out the proposed work and accomplish its stated goals.
- 7. Military Relevance, Focus Area:** Importance of the proposed work for the military.

**PEOPLE**

**MISSION**

**INNOVATION**



# Writing the Title



Warrior Medics – Mission Ready – Patient Focused

## Title Examples

### Good

“Role of antibody signaling in inducing tumor dormancy”

### Bad

“The in vitro anti-inflammatory effects of recombinant anti-CD25 immunotoxin on lamina propria T cells of patients with inflammatory bowel disease are not sufficient to cure experimental colitis in mice”



# Writing the Abstract



Warrior Medics – Mission Ready – Patient Focused

## Abstract

A short narrative that captures the essentials of the proposed work.

### What does it tell?

- What? Why? How?

### What is it meant to do for the reader?

- To describe with great concision the essentials of the proposed work
- To make the main aspects stand out
- To briefly describe the **scientific rationale** for the proposed work
- To induce the reader to read the rest of the writing.





# Writing the Introduction



Warrior Medics – Mission Ready – Patient Focused

## Introduction (Background)

A narrative that describes the background information relevant to the proposed work. It's not a detailed review of the field or of the subject.

### What does it tell?

- What is known and relevant to the work you are proposing.
- What is unknown and relevant to the work you are proposing.



## Hypothesis

A statement of possible conceptual or mechanistic explanation for a set of findings (observations, results; yours or others’).

- Have an overarching or central hypothesis.
- Must make logical, scientific sense, at least to those in the field.
- Must have solid foundation in observations, whether empirical or theoretical.

## **What It Is Not**

- Mere opinion, hunch, speculation
- An arcane notion that makes sense only to you and your friends
- Just an idea you feel like checking out
- An idea or notion that innumerable people have considered, think is true, but no one has ever subjected it to any rigorous, objective inquiry



# Writing the Hypothesis, Objectives, Aims



Warrior Medics – Mission Ready – Patient Focused

## Objectives

- Subsets of the overall goal
- Typically several for a multiyear or complex project.

## Specific Aims

Narrowly defined goals or objectives; subsets of the overall goal and broader objectives.

- **Dependent, Linked, Sequential:**      Aim 1 → Aim 2 → Aim 3
- **Independent:**      Aim 1. Aim 2. Aim 3.



# Writing the Overall Goal, Long-term Goal



Warrior Medics – Mission Ready – Patient Focused

## Overall Goal

General statements descriptive of what you plan to achieve with this work.

- Be conservative.
- Avoid lofty statements and goals generally understood to be for the whole of mankind, e.g., “our goal is to cure cancer,” “the overall goal of this work is to develop a fool-proof test for breast cancer,” “we expect these studies to result in the best treatment modalities,” and the like.

## Long-term Goal

Greater or other goals that you could achieve if you continued the work.

- Include what you think you could achieve if stayed the path with sustained funding and other requisite resources.

**PEOPLE**

**MISSION**

**INNOVATION**



# Writing the Research Plan



Warrior Medics – Mission Ready – Patient Focused

## Research Plan, Research Approach, Research Strategy:

Detailed description of the strategies and approaches to accomplish the proposed work.

### What does it tell?

- The how of the proposed work
- The why of the proposed work



# Writing the Research Plan



Warrior Medics – Mission Ready – Patient Focused

## How do I write an effective Research Plan?

- Clearly describe the experimental approaches and techniques.
- Omit details that are truisms and commonly accepted norms.
- Provide only the directly relevant details.
- Omit extraneous details.
- Do not omit any procedural detail that would strengthen your proposal.



# Responding to Reviewers



Warrior Medics – Mission Ready – Patient Focused

- Reviewers typically assess concepts, strategies, approaches, techniques.
- Reviewers do not have the responsibility to improve your writing.
- Comply with general suggestions if they improve your proposal.
- Do not shift the burden of finding and correcting your writing mistakes to reviewers.



# Responding to Reviewers



Warrior Medics – Mission Ready – Patient Focused

- Carefully and calmly assess each critique.
- Do not rush to compose a response.
- Never compose angry responses, even if the critique appears irrelevant or unjustified.
- Logically, scientifically – but ever so politely – rebut those items that merit rebuttals.

**PEOPLE**

**MISSION**

**INNOVATION**





# Grant Writing: English



Warrior Medics – Mission Ready – Patient Focused

- Make **grammar, punctuation, and spelling** 100 % accurate.
- Make sure **diction** is appropriate. If in doubt, double check.
- **Syntax** is crucial for writing well; improper syntax can fail to precisely convey the intended meanings, and thus create confusion.
- Organize sentences in a logical sequence and progression. Use words and phrases that logically link sentences and thoughts.
- **Bad grammar, bad spelling, bad syntax, imprecise diction** → Intended meanings not conveyed or incorrectly conveyed → Reviewer unable to understand, unable to make sound judgements → Recommends against funding, or recommends a revision → Problems not fully corrected in the resubmitted proposal → Reviewer angry, thinks the seeker is not serious → Recommends against funding → **The End**

**PEOPLE**

**MISSION**

**INNOVATION**



# Summary



Warrior Medics – Mission Ready – Patient Focused

- **Read the entire funding call, understand the requirements, and ensure you have sufficient time to respond.**
- **Know what you need to submit and when (White Paper vs Full Proposal, Supporting Documentation).**
- **Provide a clear, concise, and relevant white paper or proposal.**
- **Ensure your proposal is aligned with the funding agency's mission or priorities.**
- **Check your grammar, spelling, and punctuation.**
- **Seek Help Early!**

**PEOPLE**

**MISSION**

**INNOVATION**