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TITLE: Self Managing the Consequences of Major Limb Trauma

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14. ABSTRACT The objective of this research is to develop and evaluate the efficacy of a computer-based self management program (heretofore referred to as NextSteps Program) for reducing secondary conditions and improving function following major lower limb trauma. The intervention will build on widely accepted self-management programs developed for persons with arthritis as well as components of a face-to-face self-management program for civilians with long-standing limb loss. It will be necessary, however, to tailor the content and delivery of these programs to better accommodate the needs of a young, acutely injured population. Specific needs not typically addressed in the existing programs include the management of acute anxiety and post-traumatic stress disorder (PTSD), and the maintenance or acquisition of employment or return to active duty. If shown to be efficacious, computer based self management programs for the acutely injured will provide a much-needed adjunct to the orthopedic care now available and contribute to a comprehensive trauma management program to improve long-term outcomes and quality of life. The military version of SM program will provide injured soldiers with an ongoing mechanism of support as they transition from inpatient rehabilitation to the community – whether that be in the military or civilian sectors.					
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Self-Managing the Consequences of Major Limb Trauma Annual Report

April 2009

INTRODUCTION. The objective of this research is to develop and pilot of a computer-based self management program (heretofore referred to as NextSteps Program) for reducing secondary conditions and improving function following major lower limb trauma. The intervention will build on widely accepted self-management programs developed for persons with arthritis as well as components of a face-to-face self-management program for civilians with long-standing limb loss. It will be necessary, however, to tailor the content and delivery of these programs to better accommodate the needs of a young, acutely injured population. Specific needs not typically addressed in the existing programs include the management of acute anxiety and post-traumatic stress disorder (PTSD), and the maintenance or acquisition of employment or return to active duty. Specific aims of the project are: (1) to pilot the face-to-face self-management program for persons sustaining major limb trauma and refine the intervention based on feedback; (2) to develop an online version of the self-management program for persons sustaining major limb trauma (heretofore referred to as Next Steps); (3) to evaluate the feasibility and acceptability of the Next Steps program in 48-60 civilians treated at a large, Level I trauma center; and (4) to modify the Next Steps program for application in the military and to pilot the program in a group of 24 injured soldiers treated at Walter Reed Army Medical Center. We requested and received a no cost extension to complete the study.

If shown to be efficacious, computer-based self-management programs for the acutely injured will provide a much-needed adjunct to the orthopedic care now available and contribute to a comprehensive trauma management program to improve long-term outcomes and quality of life. The military version of the SM program will provide injured soldiers with an ongoing mechanism of support as they transition from inpatient rehabilitation to the community – whether that be in the military or civilian sectors.

ACCOMPLISHMENT OF YEAR THREE TASKS:

In Year 3 we had planned to (1) complete the translation of content to the Web based application; (2) complete development of the website for accessing lessons; (3) pilot the Next Steps Program with survivors treated at Carolinas Medical Center; and (4) revise the content of the lessons to be more specific to military needs. We are significantly behind schedule due to the unanticipated complexities and cost of translating the self management lessons to an on line format. Nevertheless, we have made substantial progress towards meeting the overall goals of the project. The last 6 months were largely devoted to compressing the number of lessons to 6 weeks (12 lessons) from 8 weeks (16 lessons) - based on input from our consumer advisors; completing the scripts for all 12 lessons and producing videos to be embedded in the lessons; completing the development of graphic elements for the lessons; recording the narration for each lesson; and programming lessons in flash. To facilitate the programming of all lessons into flash (and facilitate the development of similar programs in the future, including the version of NextSteps for the military) we have developed a generic *Course Builder*. This course builder will significantly reduce the time and effort needed to translate lessons into an on-line format. Although to

date we have only translated lessons 1 and 2 , we anticipate that the development of the remaining 10 lessons will proceed quickly and be completed by August 1.

Because of the unanticipated cost and time involved in developing the web based NextSteps program, we are asking for a no cost extension until March 1, 2010. We are also proposing a change in scope of work. Specifically, we are asking that (1) the pilot of Next Steps be reduced in size to include 12-15 survivors instead of the 48 survivors as originally planned; and (2) we engage our military colleagues and service members as advisors to assist us in modifying the content of the Next Steps Program for service members and veterans. We will not have sufficient funds remaining at the end of the project period to fully test the military version of NextSteps at Walter Reed as originally planned.

Also, please note Dr. Renan Castillo (rcastill@jhsph.edu) has been added to the study team as the Project Director and Co-investigator.

A revised timeline is attached (Appendix 1). We are asking for a no cost extension until March 1, 2010 to complete all tasks.

KEY RESEARCH ACCOMPLISHMENTS:

We have developed a professional, accessible website that will serve as the foundation for managing participants in the NextSteps program and streamlined the process for translating content to an online format. The format and content of the flash lessons was reviewed with the CDRMP on March 30, 2009. A copy of the slides for this presentation are attached.

The investigators will be making two presentations about NextSteps in the coming months at the Annual Meetings of the American Telemedicine Association (April, 2009) and at the Third Military Health Research Forum.

REPORTABLE OUTCOMES:

None at this point.

CONCLUSION:

If shown to be efficacious, the NextSteps Program will provide a critical complement to civilian orthopedic care now available in trauma centers throughout the country. Traditionally, we have focused on medical interventions to manage the secondary conditions of anxiety, depression and pain following major trauma. There is growing evidence to suggest these interventions may not be sufficient and that cognitive behavioral interventions are critical in sustaining long-term, quality outcomes. The planned self-management intervention uses education, self-monitoring, problem solving and skill acquisition to address multiple dimensions of the post trauma experience. Cultivation of self-efficacy, adaptive behavior, coping skills and relapse management strategies will enable participants to employ learned skills to successfully address the multiple medical and psychosocial problems they encounter post injury.

A key consideration in designing the proposed NextSteps Program is the potential for replication and overall cost-effectiveness. Advances in computer technology present the opportunity to develop multimedia, interactive self-management interventions that have the potential to reach large numbers of individuals in a cost-effective manner.

Year 3 was a critical year in the development of the on-line program. The lesson development is well underway and will provide the final piece of the intervention. In the coming year, we will complete the lessons and pilot the intervention in two cohorts at Carolinas Medical Center, and convene an advisory committee tasked with adapting the program to a military population.

This project has direct relevance for the military. Hundreds of young Americans have sustained severe limb injuries in the Iraq and Afghanistan conflicts. Following separation from military service and reintegration into society, disability from injuries will impact these individuals for the remainder of their lives. The military version of the NextSteps program will assist in assuring that these soldiers achieve the highest level of function and quality of life. Development of an online application, in particular, will be cost-effective and provide an ongoing mechanism to provide support for injured soldiers as they transition from inpatient rehabilitation to the community – whether that be in the military or civilian sectors.

REFERENCES: None

APPENDICES: Attached are 2 appendices.

Appendix 1: Revised Timeline for Year IV

Critical Event	Projected Completion
• Website Development	
Complete XHTML Production	July 1, 2009
Develop Chat Functionality	July 1, 2009
Ruby on Rails Production	July 1, 2009
• Lesson Development	
Complete Videos	May 30, 2009
Complete Recording of Narration for all Lessons	June 15, 2009
Complete Course Builder	May 15, 2009
Complete Interactive Flash Programming – Lessons 1-3	June 15, 2009
Complete Interactive Flash Programming – Lessons 4-6	August 1, 2009
Beta Test Program with Consumer Advisors & Make Revisions	September 15, 2009
• Pilot Next Steps in Civilian Population	
Obtain Preliminary Approval from Carolinas IRB	Completed
Obtain FINAL Approval from Carolinas IRB and DOD	September 15, 2009
Screen Eligible Patients in Trauma Centers	October 1, 2009
Enrollment and Baseline Assessment	November 1, 2009
Analysis and Recommendations	January 15, 2010
• Make Revisions Suitable to a Military Population	
Convene Advisors	October 15, 2009
Make Recommendations for Changes to Program	February 15, 2010
• Development of Final Report and Recommendations	February 28, 2010

CDMRP Review Development of NextSteps



Development of NextSteps: An On-Line Self Management Program for Trauma Patients

*Update for Congressionally Directed
Medical Research Programs
October, 2009*

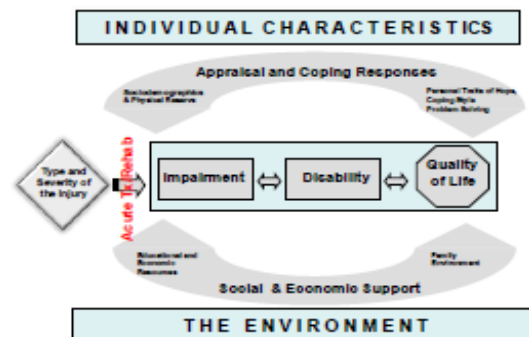
A Partnership . . .

- Johns Hopkins Schools of Medicine and Public Health
- Command Create
- Bricka Bracka
- The American Trauma Society

Our Survivor and Family Advisors:



- Robert G. Baldassari (from Fairfax, VA)
- Adam Blomberg, MD (from Boston, MA)
- Brenda Breitenbach (from Severna Park, MD)
- Pam Bryan (from Madison, TN)
- Sherry Chapman (from Coventry, CT)
- Carrie Krug, DPT (from Baltimore, MD)
- Scott Shields, M.B.A. (from Upper Marlboro, MD)
- Steve Wilkinson (from Miami, FL)



Opportunities for Improving Outcomes

- Self management (SM) Programs target these mutable characteristics using cognitive behavioral interventions
- Shown to be efficacious and have gained widespread application in arthritis and other conditions for which pain and disability common, but . . .
- Not customized for specific needs following trauma

Self Management Interventions

- 6-8 weekly group sessions facilitated by a trained group leader
- Emphasis in each session on:
 - Knowledge Acquisition
 - Problem Solving
 - Skill acquisition
 - Self Monitoring
 - Identifying and Building on Strengths

CDMRP Review

Development of NextSteps

Self Management Programs Core Value of Patient Centered Care



- ✓ Empowers patients to become active participants in their own care
- ✓ Patients (along with their care providers) are held accountable for good outcomes

Self Management for Amputees

PALS



- Course developed in collaboration with the *Amputee Coalition of America* (and funded by CDC)
- Evaluated in a RCT: 50 peer support groups (450 people) were randomized
- Now being implemented by the ACA and at Walter Reed

Arch Phys Med and Rehabil 90(3):373, 2009.

Self Management for Trauma Survivors



- Focus on prevention of secondary conditions
- Emphasize return to work
- Acknowledge high prevalence of acute anxiety and PTSD
- Integrated into the Trauma Survivors Network - TSN

The Trauma Survivors Network

<http://www.traumasurvivorsnetwork.org>

The TSN is designed to help trauma patients and families survive, connect and rebuild



- ✓ Access to practical, every-day information
- ✓ Keep family members in the loop
- ✓ Join an on-line community forum
- ✓ Sign up for peer visitation, peer support group or NextSteps classes
- ✓ Give back: volunteer and contribute

Extending our Reach: Online SM Programs

- SM works . . . but often difficult to access services due to limited program availability and practical barriers such as transportation, timing of classes
- Web based interventions can overcome these barriers & provide convenient access to expert information and cognitive behavioral therapies supported by on line communities
- Growing literature supports the benefits, but more research is needed to firmly establish their efficacy
- *Low cost, good reach . . . potentially high efficacy !*

Relative Advantages of Interventions Designed to Modify Behavior

Adapted from www.healthmedia.com



CDMRP Review Development of NextSteps

On line SM Programs Challenges . . . Opportunities

- Wide range of participant needs . . . web based platform allows for tailoring
- Participants at varying levels of computer self-efficacy . . . Also have access to wide range of hardware/connectivity
- Engaging survivors & maintaining their active participation on line vs. in-person
- High cost of producing materials to meet the needs of the young, computer savvy crowd
- The cutting edge is moving fast !



1. Online, interactive SM Lessons- 2 per week for 6 weeks
2. Ongoing Support Services
 - One-on-one telephone orientation to program
 - Weekly on-line chats among class participants, facilitated by a SM Coach
 - Electronic bulletin board monitored by coaches
 - Computer and telephone based "help" desks
3. Access to Resources
 - Toolbox, workbook, private journal



6 Weeks . . . 12 Lessons



Lesson Content

Week 1: Taking Stock	Explore where you are on the Road to Recovery. Learn more about self management and the importance of being a self-manager. Improve your communications skills and begin to practice relaxation
Week 2: Moving Forward	Learn about problem-solving. Identify problems, turn them into goals you can reach, and learn how to tell if you are making progress.

Lesson Content

Week 3: Managing Your Emotions 1	Learn the differences between normal emotional ups and downs following an injury and major depression. Discover new ways to improve your mood.
Week 4: Managing Your Emotions 2	Focus on the body's natural stress response and anxiety. Learn how you can change your thinking to improve your health. Discover new relaxation techniques to deal with physical symptoms of stress.

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CDMRP Review

Development of NextSteps

Lesson Content

Week 5: Family and Friends	Learn to identify helpful and unhelpful help. Focus on how your injury impacts your family and friends. Learn about Caregiver Stress and how you can help others manage challenges they are facing.
Week 6: Looking Ahead	Think big and explore your hopes and dreams. Discover how to manage setbacks and celebrate your success in NextSteps.

Format of Lessons is Standardized

- Welcome and Objectives
- Focus of this Week's Chat
- Opportunity to Review Last Lesson
- Review Practice Activity from Last Lesson
- Self Check- In with Feedback

LESSON CONTENT

- Take Home Message
- Home Exercise
- Relaxation Exercise

Learning Techniques Used

1. Interactive Didactics
2. Self Monitoring with Feedback
3. Videos
 - Survivor stories
 - Expert videos
 - Video demonstrations
 - Relaxation videos
4. Take Away Activities

Progress to Date – Overall Tasks

Website Development	
Wireframing	X
Graphic Design	X
XHTML Production	
Ruby on Rails Production	
Develop Learning Management System	X
Develop Online Community	X
Develop Chat	
Lesson Development	
Develop Course Builder	X
Build Editor for Lessons	X
Beta Testing	
Pilot Testing	
Modify for Application to Military	

Progress to Date – Lesson Specific

	WEEK					
	1	2	3	4	5	6
Develop Content	X	X	X	X	X	X
Identify and Design Active Learning Activities	X	X	X	X	X	X
Write Lesson Scripts	X	X	X	X	X	X
Record and Edit Audio	X					
Produce Videos	X	X	X	X	X	
Develop Wireframes	X	X	X	X	X	X
Develop Graphic Elements	X	X	X	X	X	X
Develop Interactive Flash Movies w/ Audio (XML)	X	X	X	X	X	X



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CDMRP Review Development of NextSteps

Welcome and Objectives

Welcome to Week 3

In this week's lessons you will:

- Begin to explore your emotions
- Learn how to cope with changes in your life after an injury
- Pay attention to your psychological and emotional recovery
- Take care of yourself both physically and emotionally to improve your overall health and well-being

Subject of this Week's Chat

During this week's chat, you will be given a chance to share your experiences of what things you're doing to increase your positive feelings and decrease your negative ones.

Opportunity to Review Previous Lesson

Welcome to Week 3

Lesson 4

Lesson 5

Lesson 6

Lesson 7

Review Practice Activity

Review Practice Activity:

- Identify one problem.
- Turn it into a goal.
- Come up with different ways to reach your goal by using the problem-solving approach.
- Talk with your NextSteps partner.
- If you need help getting started, bring it up in the chat or forum.

Self Monitor HOW You are Doing

How Are You Doing?

On a scale of 1 to 10, with 1 being poor and 10 being excellent, rate your physical health, activity level, emotional well-being, and overall quality of life.

Physical Health: Poor 1 Good 10 Submit

Activity Level: Poor 1 Good 10 Submit

Emotional Well-Being: Poor 1 Good 10 Submit

Overall Quality of Life: Poor 1 Good 10 Submit

Feedback



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CDMRP Review Development of NextSteps

Monitor WHAT You are Doing

Monitor WHAT You are Doing

Didactic Material

Survivor Stories Illustrating Key Messages

Exercises – Fill In

Flip Chart Option

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CDMRP Review Development of NextSteps

Summary and Feedback

nextsteps www.nextsteps.org.au

Balancing Positives and Negatives

Positives

☐ 1. I found some things I don't know about

☐ 2. I have made some new friends

☐ 3. I have more power of my body

☐ 4.

☐ 5.

☐ 6.

Negatives

☐ 1. I am very angry that this happened to me

☐ 2. I have been depressed

☐ 3. I am afraid that I won't ever be normal again

☐ 4.

☐ 5.

☐ 6.

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Self Screening – e.g. for Depression

Emotional Reactions to Injury

Each of the list of five word contains signs and symptoms of depression. Do any of these describe how you feel? Please select the last 2 weeks and today - 30 days ago symptoms that were present for most of the day and nearly every day.

☐ 1 - Not at all
 ☐ 2 - Source Once
 ☐ 3 - More than once the day
 ☐ 4 - Nearly every day

<input checked="" type="checkbox"/> 1. Little interest or pleasure in doing things <input type="checkbox"/> 2. Feeling down, depressed, or hopeless <input type="checkbox"/> 3. Trouble falling or staying asleep, or sleeping too much <input type="checkbox"/> 4. Feeling tired or having little energy <input type="checkbox"/> 5. Poor appetite or overeating <input type="checkbox"/> 6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	<input type="checkbox"/> 7. Trouble concentrating on things, such as reading the newspaper or watching television <input type="checkbox"/> 8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been noticed around a lot more than usual <input type="checkbox"/> 9. Thoughts that you would be better off dead or of harming yourself in some way
--	---

[Submit](#)

[EMOTIONAL CAPTIONING](#)
[GAIN AND LOSE WEIGHT](#)
[ILL](#)
[TOOK A TRIP](#)
[TOOK A LOT](#)

CLINICAL CAPTIONING IS CURRENTLY DISABLED

Feedback

SCORE	PROVISIONAL DIAGNOSIS	RECOMMENDATIONS
0 - 4		
5 - 9	Minor Symptoms	Support. Educate to call if worse. Recheck in 1 month
10 - 16	Major Depressive (Dysthymic) Major Depressive (MDD)	Support mental health development in psychotherapy Antidepressant in psychotherapy
17 - 19	Major Depressive (Anxious Distress)	Antidepressant in psychotherapy
> 20	Major Depressive (Severe)	Antidepressant and psychotherapy (specify if not improved at 1 month)

Fact or Fiction

The screenshot shows a presentation slide with a light blue background and a faint tree graphic on the left. The slide content is as follows:

- Emotional Reactions to Injury**
- FACT or FICTION?**
- Everyone gets depressed after an injury.*
- Two options are presented:
 - ☐ **Fact** (with a blue icon)
 - ☒ **Fiction** (with an orange icon)
- Right, this is fiction.**
- Constantly worrying can be debilitating and may people feel alone or sad often.**
- Nonetheless, depression is not inevitable. Although some people do experience depression in fact, the majority of injury survivors do not experience depression that requires treatment.**

At the bottom of the slide, there is a navigation bar with icons for back, forward, and search, along with a search input field.

Fact or Fiction

Emotional Reactions to Injury

FACT OR FICTION?

Everyone gets depressed after an injury.

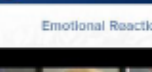
☒ Fact ☐ Fiction

Actually, this is Fiction.

The truth is while some people do experience major emotional distress, the majority do not experience depression that requires treatment.

Basics of Injury Prevention | What is an Injury? | Emotion | Risk Factors | Prevention

Expert Videos



Emotional Reactions to Injury: What Can Help

- Support
- Next Steps
- Psychotherapy
- Medication

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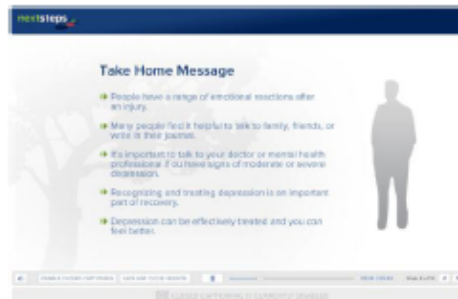
7

CDMRP Review Development of NextSteps

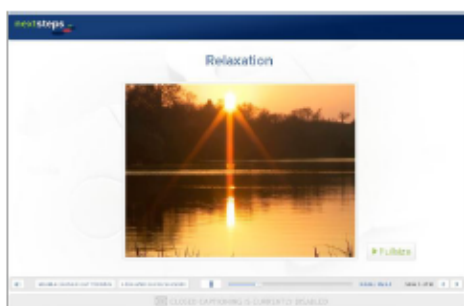
Tools



Putting it Into Practice



Relaxation



Pulling it all Together VIEW LESSON 1 'On-Line'



Timeline for Remaining Activities

Website Development	
Wireframing	X
Graphic Design	X
XHTML Production	April-July
Ruby on Rails Production	April-July
Develop Learning Management System	X
Develop Online Community	X
Develop Chat	April-July
Lesson Development	
Develop Course Builder	X
Build Editor for Lessons	X
Beta Testing	Aug-Sept
Pilot Testing	Oct-Nov
Modify for Application to Military	Sept-Dec

Timeline for Remaining Activities

	WEEK					
	1	2	3	4	5	6
Develop Content	X	X	X	X	X	X
Pilot and Obtain Consumer Input	X	X	X	X	X	X
Identify and Design Active Learning Activities	X	X	X	X	X	X
Write Lesson Scripts	X	X	X	X	X	X
Record and Edit Audio	X					
Produce Videos	X	X	X	X	X	
Develop Wireframes	X	X	X	X	X	
Develop Graphic Elements	X	X	X	X	X	
Develop Interactive Flash Movies w/ Audio (XML)	X					

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