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TITLE: Telepharmacy Robotic Medicine Delivery Unit "TRMDU"  
Assessment

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<b>14. ABSTRACT</b>  The military has an increasing number of patients with combat-related impairments that contribute to suboptimal medication self-management. These impairments include TBI, PTSD, poly-trauma, and mental health issues. A significant number of these patients are in transitional care outpatient settings, lacking adequate clinical staff to provide the necessary pharmacy services. The objective of this study is to evaluate whether the use of a TelePharmacy robotic remote medication dispensing unit (TRMDU), in addition to medication review in patients assigned to WTUs, VA hospitals, and similar units, leads to improved outcomes and reduced health care costs for patients when compared with medication review alone. This study will use a prospective non-randomized repeated measures design with two sites using a control condition for 12 weeks, followed by a 12-week TRMDU intervention condition. The third site will serve as intervention only.					
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## Table of Contents

	<u>Page</u>
Cover Page.....	1
Report Documentation Page.....	2
Table of Contents.....	3
Introduction.....	4
Body.....	4
Key Research Accomplishments.....	5
Reportable Outcomes.....	5
Conclusion.....	5
References.....	6
Appendices.....	None

## **INTRODUCTION**

This study involves a FDA cleared remote medication management device, 21 CFR 880.6315, which provides unit dose delivery of medications across the continuum of care. The Telepharmacy Robotic Medication Dispensing Unit (TRMDU), developed by INRange® Systems, Inc., is a Class II medical device, located in the home, outpatient setting, or in the field, and consists of a medication delivery unit and two-way communication software that allows a health care professional to remotely manage prescriptions stored and released by the patient-operated delivery unit. The delivery unit is approximately the size of a bread box, and it plugs into a standard power outlet.

We have continued to develop the protocol that will assess this TRMDU unit in subjects with traumatic brain injury (TBI), post-traumatic stress disorder (PTSD), multiple traumatic brain injury (MTBI), or Polytrauma. The objective of this study is to evaluate whether use of a TRMDU, in addition to medication review in patients assigned to WTUs, VA hospitals, and similar units, leads to improved outcomes and reduced health care costs for patients when compared with medication review alone.

## **BODY**

### **IRB Preparation and Application (Jan 2011 – Oct 2011)**

The study was approved by institutional IRB's at the University of Illinois at Chicago on March 25, 2010 and Columbia College of Nursing on October 25, 2010. It was submitted for review to the IRB at NMSCD for the Camp Pendleton site on September 16, 2010. The IRB voted to approve the study in or around May 2011. The study was disapproved by RDML Faison, Commander of Navy Medicine West on May 25, 2011. Re-engagement to prepare an IRB with Fort Knox was begun in June. However, due to significant changes occurring to the WTU housing and population, and changes in personnel, the IRB submission has not yet been completed as of October 2011.

### **Ongoing Study Site Recruitment, Visits, and Development (Jan 2011 – Oct 2011)**

With the disapproval of the study by RDML Faison, it is anticipated that the program implementation and evaluation will now be conducted at two sites: 1) James A. Haley VA Hospital and Polytrauma Facility in Tampa Bay, Florida (Tampa VA); 2) Ireland Army Community Hospital, Fort Knox, Kentucky (Fort Knox).

### **Protocol**

No significant changes were made to the protocol during the period Dec 26, 2010 – Oct 25, 2011. A copy of the current study protocol is appended to this report.

### **DIACAP Preparation and Submission**

INRange commenced preparation of a comprehensive DIACAP C&A package Q2/2009. At the present time, the following items, artifacts and activities have been submitted and are being reviewed by the Navy Information Assurance team:

- System Identification Profile (SIP)
- DITSCAP baseline documentation
- Navy POA&M (Plan of Action and Milestones)
- Continuity of Operations Plan (COOP)

- Disaster Recovery “Table Top” exercise
- Enclave and system diagrams
- All servers have been locked down to STIG compliance and scanned with Retina
- Remediation of CAT 1 and Cat 2 Retina scan findings
- All required artifacts have been submitted
- Data Center On-site Audit completed
- Incident Response Plan (made available to auditor)

To date, INRange Systems has received no correspondence regarding the status of the ATO. We were informed by the Navy that the web based ATO is a new certification. In addition, we were informed that there are approximately 10 applications for this type of certification in the queue. No forecast of approval date has been provided.

## **KEY RESEARCH ACCOMPLISHMENTS**

To date, the following has been completed:

- Protocol
- Identification of the participating sites
- Obtaining required approvals and contracts for Naval Hospital Camp Pendleton
- Gaining IRB approval at University of Illinois at Chicago and Columbia College of Nursing

To date, we have made considerable progress in the following:

- Preparation and submission of the IRB documents to Walter Reed IRB, for the Ireland Army Community Hospital
- Preparation of IRB documents for Fort Detrick submission

## **REPORTABLE OUTCOMES**

We are currently pursuing approval to begin the study. At present there are no reportable outcomes. We expect that, when completed, this study will generate at least one manuscript on the effectiveness of the TRMDU on adherence and outcomes assessed in this study for this population. Publication of these manuscripts will be pursued in major, peer-reviewed medical journals.

## **CONCLUSION**

Findings from several studies have shown that better medication adherence leads to better outcomes, fewer hospitalizations and emergency department visits, and greater QOL. Use of the TRMDU may improve medication adherence; reduce DRPs; and positively impact pain, psychological, and QOL measures for veterans with TBI, PTSD, and/or polytrauma. In addition, health care costs and hospitalizations may be reduced. If findings from this study support the hypotheses, use of the TRMDU may be a valuable intervention and lay the groundwork for applications of the TRMDU with this population in both the Warrior Transition Units and in community settings. In addition, those individuals in rural settings with limited access to major medical centers and other populations with documented difficulty with medication adherence may benefit from such a device. This study will serve to lay the groundwork for additional funding to assess the effectiveness of the TRMDU in these settings.

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