

AD_____

Award Number: W81XWH-05-1-0577

TITLE: Criterion-Based Training to Reduce Surgical Errors

PRINCIPAL INVESTIGATOR: Marvin P. Fried, M.D.

CONTRACTING ORGANIZATION: Montefiore Medical Center
Bronx, NY 10467

REPORT DATE: September 2008

TYPE OF REPORT: Annual

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for Public Release;
Distribution Unlimited

The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision unless so designated by other documentation.

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 01-09-2008		2. REPORT TYPE Annual		3. DATES COVERED (From - To) 24 AUG 2007 - 23 AUG 2008	
4. TITLE AND SUBTITLE Criterion-Based Training to Reduce Surgical Errors				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER W81XWH-05-1-0577	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Marvin P. Fried, M.D. E-Mail: mfried@montefiore.org				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Montefiore Medical Center Bronx, NY 10467				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Medical Research and Materiel Command Fort Detrick, Maryland 21702-5012				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT Technical skill is at the core of surgery. Surgical training typically lasts for a specified time period or number of procedures. This approach produces surgeons with considerably variable skill levels. Also, training on patients is becoming unacceptable for patient safety. In contrast, pilots and other non-medical personnel are trained to criteria on simulators to ensure skill proficiency in their MOS prior to reporting for duty. Proficiency levels are objectively established by experienced practitioners, and the trainee is required to consistently demonstrate that level of proficiency before progressing. We propose to use a surgical simulator (the ES3) to train surgical residents to criterion performance levels, and to investigate whether criterion-based training is superior to training for a fixed number of trials. Twenty-four otolaryngology residents will serve as subjects. Eight attending otolaryngologists will establish performance criteria and will serve as comparators for infra-operative assessment. Subjects will complete a battery of validated objective tests to assess visuospatial, perceptual and psychomotor abilities. An experimental group will be trained to criterion on the simulator, and then perform a procedure on a patient. A control group will train by repeatedly performing the same procedure on patients, with no simulator training. All procedures will be videotaped and objectively assessed for explicitly defined metrics. We hypothesize that prior training to established criteria will reduce surgical errors, and provide evidence for training on simulators before ever operating upon a patient.					
15. SUBJECT TERMS Surgical Simulation, Training to proficiency, Virtual reality Training, Patient Safety					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 5	19a. NAME OF RESPONSIBLE PERSON USAMRMC
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (include area code)

Table of Contents

	<u>Page</u>
Introduction.....	4
Body.....	4
Key Research Accomplishments.....	5
Reportable Outcomes.....	5
Conclusion.....	5
References.....	5
Appendices.....	5

INTRODUCTION:

Technical abilities are highly individualistic, as shown by the wide range of ability characterizing different musicians, artists, and others. Given that the issue of creating a competent and safe surgeon is of paramount importance, we hypothesize that the objective measurement of a resident's progress is critical to both the achievement and the assessment of proficiency.

BODY:

Eight junior (postgraduate years 1, 2, and 3) Otorhinolaryngology residents were enrolled at the Montefiore Medical Center site. Seven have undergone baseline skills assessment on the Endoscopic Sinus Surgery Simulator, and three have performed a digitally recorded pre-training surgical procedure in the operating room. Three residents have completed training to proficiency, indicated by achieving a score of greater than 94 on the Sinus Surgery Simulator three consecutive times, as previously determined by a panel of experts. Two of these residents have performed a digitally recorded post-training surgical procedure in the operating room and therefore have completed their participation in the study. The other resident will perform the digitally recorded post-training surgical procedure in the operating room as soon as an eligible surgery becomes available. The remaining residents will also be recorded on their first surgical performance, trained on the ES3 until the desired level of proficiency is reached, and then recorded on their final surgical performance.

The control group is being made up of eight junior Otorhinolaryngology residents from two collaborating institutions, New York Eye and Ear Infirmary and New York University Medical Center. Our efforts in establishing the control group had been extensively delayed while awaiting ORP approval for submission of an IRB to our two collaborating institutions. We had originally sent the application to the ORP on February 15, 2007. The subject protocol for New York University Medical Center was resubmitted on July 29, 2008. The subject protocol for that institution was reviewed and accepted by the USAMRMC, ORP, and HRPO on July 30, 2008. Since ORP approval of IRB submission to our collaborating institutions, four of the eight junior residents at New York University Medical Center who will make up the control group had their base-line skills assessed. Two of these residents were videotaped while assisting in an ESS case and one of these residents has assisted in a second ESS case. We will finish assessing the base-line skills of the other four junior residents who will make up the control group, and will follow that by videotaping the live training procedures done by the control residents.

We have videotaped the benchmark endoscopic sinus surgical procedures performed by two otolaryngology attending doctors. We plan on taping three more attending doctors shortly since this aspect of the study was also dependent on receiving ORP clearance for IRB submission.

We are also currently in the process of gathering expert sinus surgeons to make up the rater group, so that upon completion of all of the surgical procedure recordings we will have a group ready to rate the subject and control group.

Key Research Accomplishments:

- **Completion of initial assessment by 7/8 subject group residents on ES3**
- **Completion of initial recording of pre-training surgical procedure by 3/8 subject group residents**
- **Completion of training to proficiency by 3/8 subject group residents on ES3**
- **Completion of final recording of post-training surgical procedure by 2/8 subject group residents**
- **Completion of initial assessment by 4/8 control group residents on ES3**
- **Completion of initial recording by 2/8 control group residents**
- **Completion of recorded surgical procedure by 2/5 expert Endoscopic Sinus Surgeons**

Reportable Outcomes:

We do not, as of yet, have any reportable outcomes due to the continuous delay we had been faced with.

Conclusions:

N/A

References:

N/A

Appendices:

N/A

Supporting Data:

N/A