

Medical Team Training in the Veterans Health Administration

Communication Failure in Health Care

Communication failure during the process of health care delivery can be profoundly consequential to the quality and safety of the health care experience for patients. The implications for communication failure also weigh heavily on the security and job satisfaction of health care providers in the clinical workplace. On face validity, it is reasonable to assume a positive correlation between patient well-being and job satisfaction through the entire hierarchical chain of the health care workforce.

The Department of Veterans Affairs (VA) National Center for Patient Safety (NCPS) is offering the Medical Team Training (MTT) program to VA Medical Centers (VAMC) in order to address communication failure in the delivery of health care. A national roll out of this program will occur over a 2 ½ year period from January 2007 to July 2009. The primary focus of this program in each facility will be the Operating Room (OR) and Intensive Care Units (ICU). Additional clinical units such as the Emergency Department (ED), Medical-Surgical Unit, and clinics can be enrolled in the program as determined by facility leadership.

As this program is delivered to facilities across the VA health system, data collected from various sources will be analyzed to inform a comprehensive program evaluation. Our evaluation is designed to address the following two questions:

1. *Will clinical outcomes of surgical care improve in participating VA Medical Centers after the Medical Team Training program is implemented?*
2. *Will job satisfaction of health care providers increase in participating VA Medical Centers after the Medical Team Training program is implemented?*

Background and Significance of Communication Failure in Health Care

In December 1999, the Institute of Medicine (IOM) released a report about the safety of health care in the United States entitled *To Err Is Human: Building a Safer Health Care System*¹⁶. This report was based on 45,000 chart reviews in three states extrapolated to all United States hospitals in 1997. The authors estimated that 44,000 to 98,000 Americans receiving health care each year were dying from adverse events – an injury resulting from medical care and not due to the patient’s underlying medical condition. Many believed this report was an underestimate of the problem because the data only reflected hospitalized patients, excluding nursing homes, ambulatory care, and home care. These studies were also limited by data restricted to medical chart abstractions, the imprecision of coding data, defining preventability of events, and the requirement of reviewer concurrence on adverse events.

More recently in July 2004, the HealthGrades Quality Study released a report based on the application of the Agency of Healthcare Research and Quality (AHRQ) Patient Safety Indicator software to Medicare administrative data from 37 million discharges during the 2000-2002 period⁸. An estimate from these data extrapolated to the entire United States population suggested that more than 191,000 patients were dying from adverse events annually from health care unrelated to medical condition¹.

¹ Patient Safety Indicators (PSI) are 20 clinical conditions identified by AHRQ, in collaboration with the University of California-Stanford Evidence-Based Practice Center, that are readily identified from hospital discharge data and

Despite the public attention given to patient safety by the IOM report, five years later Leape and Berwick, two authors of that report, indicated that “progress has been frustratingly slow”¹⁷. However, these same authors have described the Veterans Health Administration as “a bright star in the constellation of safety practice, with system-wide implementation of safe practices, training programs, and the establishment of four patient safety research centers”¹⁷. Many health care organizations have created reporting systems to track adverse events but, unfortunately, that is where their efforts began and ended. Reporting adverse events will do nothing to improve the safety of health care unless those reports lead to effective actions.

Communication failure – Major source of adverse events in health care

Communication failure is a leading source of adverse events in health care. Gawande cited communication breakdowns as contributing factors in 43% of adverse events in surgical cases⁵. Risser and colleagues found a significant number of teamwork failures in review of malpractice claims for care in Emergency Rooms²⁵. Sutcliffe reported communication failure as one of the most commonly cited contributing factors in 70 patient care adverse events in a university teaching hospital³⁴. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) identified communication failure as a pivotal factor in over 65% of 3,000 sentinel event reports from 1995 to 2005¹³.

Teamwork in health care associated with enhanced outcomes and nurse retention

Several large studies of ICUs have demonstrated higher levels of coordination and more effective communication among staff members that were associated with improved efficiency in patient care. These studies note more effective teamwork associated with reduced risk-adjusted morbidity and mortality, as well as increased job retention among nurses^{15, 1, 32}. Pronovost showed that implementing a “daily goals form” improved care coordination and reduced length of stay in the ICU²⁴. Carthey and deLeval reported an observational study involving cardiac surgical teams performing the Arterial Switch procedure in newborn infants in the United Kingdom³. More favorable patient outcomes from surgical teams with the ability to compensate for complications during surgical procedures were associated with more effective collaborative teamwork in the OR. These surgical teams were more stable, had greater cognitive flexibility, permitted fewer distractions, and facilitated better situational awareness in comparison to teams with less favorable results³.

In 70%-80% of more than 8,000 Root Cause Analysis cases reported to the National Center for Patient Safety, communication failure is identified as at least one of the primary contributing factors in adverse events²¹. Data from the National Veterans Affairs Surgical Risk Study shows lower than expected morbidity and mortality when surgical services had effective interdisciplinary peer interaction³⁸. Also, in a survey of 125 VAMCs, Meterko reports a strong correlation between teamwork culture across professional disciplines and patient satisfaction¹⁹.

Traditional training and education of physicians, nurses, and allied health personnel has focused on individual technical skills for proficiency of specific tasks. Very little attention has been given to how professionals work together in the complex and dynamic world of health care. To

deemed preventable patient safety incidents. Only 16 PSIs apply to the Medicare population (4 PSIs apply to Obstetrical discharges).

address this deficiency, the IOM has recommended the application of Crew Resource Management training in health care systems¹⁶.

Crew Resource Management (CRM) – Potential means to an end?

What is CRM and how is it relevant to health care? From several workshops in 1979-80, the aviation industry concluded that failures of collaborative interaction and teamwork were responsible for 70% of airline crashes that were examined²². In response to these findings, airline companies began developing training programs for cockpit personnel, originally known as Cockpit Resource Management, which focused on flight personnel in cockpit simulators³⁷. These programs subsequently expanded to include the entire flight crew, maintenance crews, and air traffic controllers, and become known as Crew Resource Management.

The CRM model has focused on the safety, efficiency, and morale of humans working together. Although there is no definitive study correlating CRM training with enhanced airline flight safety, the aviation industry has accepted this practice on face validity, and CRM training has become an international requirement for all aviation employees^{10,27}. CRM has moved aviation training beyond the limited focus of technical flying to broader dimensions of human factors engineering, fatigue and stress management, effective communication, shared awareness, and teamwork. In surveys, airline crew members have consistently cited CRM training as relevant, useful, and effective in changing attitudes and behaviors to improve safety³⁰.

CRM in health care

Cross-sectional surveys by Sexton and colleagues have suggested that safety-related behaviors applied and studied extensively in aviation may also be relevant in health care³⁰. Helmreich and Merritt have proposed a translation of teamwork behaviors from aviation to health care by the application of “countermeasures” introduced in CRM training. These measures included briefings, debriefings, workload distribution, fatigue management, inquiry, graded assertiveness, contingency planning, and conflict resolution⁹. CRM applications in a simulated work environment have been applied in ORs, labor and delivery units for neonatal resuscitation, and hospital emergency departments^{12,25,7,2}. Grogan and Leonard have reported CRM training for multiple medical disciplines in a large health system^{6,18}.

Sherwood and colleagues champion the concept of “relationship-centered care”, which provides the framework for effective multidisciplinary teamwork to improve patient safety³¹. Uhlig reported successful teamwork with multidisciplinary work rounds, including patients and their advocates, on his cardiac surgical service in Concord, New Hampshire. Press-Ganey scores for patient satisfaction increased to a 99% level within several months of initiating this program, and the health care team reported improved job performance through more timely and effective communication³⁶.

CRM Program in the VA – NCPS Medical Team Training Program

The Medical Team Training (MTT) program is based on CRM principles from aviation. Unique to this program are Learning Sessions facilitated by clinical faculty members in each VAMC and delivered entirely in a health care context. For each Learning Session, the two MTT faculty members are selected for clinical domain expertise and matched to the participating clinical units

in each facility. A faculty team is comprised of one physician, one nurse, and one or two program specialists.

The NCPS model for team training is predicated upon a commitment by participating facilities to implement CRM tools introduced in the Learning Sessions. This commitment which includes active leadership involvement is a necessary condition for facility enrollment in the program. From the participating facility's perspective, the program is comprised of three important components:

1. Preparation and planning for 2 months prior to the Learning Session and subsequent implementation of the MTT project;
2. Learning Session in the VA facility; and
3. Implementation of a MTT project with follow-up data collection and support from NCPS staff for a minimum of one year.

Preparation and Planning for MTT Learning Session

The MTT program has been available to VA facilities on a voluntary basis since program inception in 2003. However, the national roll out of this program commenced in January 2007, which requires enrollment of all VAMCs that provide surgical services. These facilities will commit all staff working in the Operating Room, Post-Anesthesia Care Unit (PACU), Same Day Surgery, Surgery Clinics, Supplies, Procurement and Distribution Department (SPD), and Intensive Care Units. Outpatient surgical centers will be included. Additional clinical units may be enrolled at the discretion of facility leadership.

A facility may be motivated to improve communication based on a recent experience with an adverse event in a specific clinical unit, or a clinical department chief may decide to champion the cause of enhanced communication on his/her service. As of June 2007, 69 Learning Sessions have been hosted in 53 VAMCs involving various targeted clinical units. To date, about two-thirds of the facilities have involved surgical services and one-quarter have focused on ICUs, with considerable overlap of these two groups. Additional clinical units have included a Medical-Surgical unit, Ambulatory Clinics, Emergency Departments, and a Long Term Care Unit (**Appendix A**).

The interested VA facility submits the program application, which can be accessed from the NCPS Intranet website (<http://vaww.ncps.med.va.gov/Education/MTT/index.html>). The application specifies the commitment from each VAMC required for their participation in the program (**Appendix B**). That commitment requires the formation of a multidisciplinary Implementation Team that will develop specific goals for the MTT program and guide the implementation of their MTT project. For example, the typical Implementation Team from surgical services would include the Chief of Surgery, Chief of Anesthesiology, Nurse Manager of the OR, Director of SPD, Medical Director of the ICU, ICU Nurse Manager, and other individuals representing workforce from the OR and ICU.

Preparation for the Learning Session and project planning will begin after the members of the Implementation Team have been established and begin to meet on a regular basis. Leadership participation on the Implementation Team is critical to its success. Over an eight-week period leading up to the Learning Session, the Implementation Team will have a series of three

conference calls with NCPS staff, which will facilitate the planning and goal development for the facility's MTT project.

MTT Learning Session – Peer-to-Peer Communication in the Health Care Context

The MTT Learning Sessions are held in the host VAMC. MTT faculty will work with VAMC leadership to maximize attendance of staff for each Learning Session. One session is held on a day the OR is closed to elective surgical procedures. A second session on the following day is available to staff from ICUs and other units that cannot be closed provided a minimum of 30 participants will be attending. On one of the days, the OR is closed for elective surgical procedures and open only for emergency procedures to facilitate staff attendance from the OR, PACU, Same Day Surgery, Surgery Clinics, and SPD. Facility leadership is asked to work with ICU nurse managers to maximize attendance from all three shifts. An estimated attendance of 30 participants is necessary to schedule a Learning Session.

In their comprehensive review of CRM applications in health care, Musson and Helmreich issue their concerns for dependence on aviation content in CRM programs for health care professionals. This trepidation impedes their acceptance of CRM principles applied in the clinical workplace. Therefore, **curriculum content in our MTT Learning Sessions is focused entirely on health care**. Each Learning Session is held in the hosting VAMC for a full day of interactive dialogue between faculty and participants, interactive exercises, and teaching films of clinical vignettes demonstrating CRM principles applied in health care.

Each session is facilitated by two clinicians, a physician and a nurse with clinical backgrounds matched to the clinical audience. We have developed a clinical faculty based upon the thesis of Everett M. Rogers, which is articulated in his seminal book, *Diffusion of Innovations*. In studying the diffusion of innovations in organizations, Rodgers identifies peer-to-peer communication as critical to the success of advocating for change: "When someone who is like us tells us of their positive evaluation of a new idea, we are often motivated to adopt it"²⁶. Facilitators work seamlessly together as a model for collaborative teamworkⁱⁱ.

Curriculum agenda and teaching films

Prior to commencing the Learning Session, the Safety Attitudes Questionnaire (SAQ) is administered to participants, taking approximately 15 minutes to complete. This questionnaire, developed and validated by Bryan Sexton from the Johns Hopkins Quality and Safety Research Group, measures attitudes and behaviors expressed in six factors related to safety: safety climate, teamwork climate, job satisfaction, working conditions, perceptions of management, and stress recognition. SAQ instruments are distributed to participants working in specific clinical domains such as OR, ICU, and Ambulatory Clinics. A more general Teamwork and Safety Climate survey is available for staff from other clinical or non-clinical areas. The SAQ is reliable and used by a growing number of health systems in the United States. Stable psychometric

ⁱⁱ Current NCPS faculty and staff for the MTT program includes the following: 3 Nurses, 1 Surgeon, and several field faculty members of nurses and surgeons who champion this program. Program management and logistical support is provided by 2 program specialists at NCPS Ann Arbor (one with a Master's degree in Communication Studies). Our Quality Improvement team in NCPS White River Junction, VT includes a Clinical Psychologist, a Nurse, a project manager/analyst, and 2 program specialists. The NCPS Ann Arbor office of Biostatistics supports this program with quantitative data analysis and Natural Language Processing of qualitative data.

properties for this instrument have been validated by a test population of more than 10,000 respondents in the United States, United Kingdom, and New Zealand²⁹. This questionnaire will be repeated with participants in staff meetings of surgeons, anesthesiologists, and OR staff 12 months following the Learning Session. Results from a comparative data analysis with six factor scores will be submitted to each participating facility. Aggregate data from all participating VAMCs will be analyzed as a component of our program evaluation after the national roll out has been completed.

During program development, nine teaching films of clinical vignettes were written and produced by NCPS staff, in collaboration with the Patient Simulation Center of Innovation in the Palo Alto, California VAMC in February 2004. These films, shown and debriefed throughout the Learning Session, were designed for the curriculum to model examples of CRM applications improving communication in a health care setting. Additional teaching films, also integrated into the Learning Session, were produced by NCPS in collaboration with the Boston VA Healthcare System in January 2007 to demonstrate safe patient hand-offs using the SBAR model (**Appendix C**).

Following the conclusion of the Learning Session, the Implementation Team will meet with MTT faculty to refine their specific plans for implementing their MTT project. The work product from this meeting is the completion of the MTT Project Implementation Table, which will guide facility follow up by NCPS staff (**Appendix D**).

MTT Project – Briefings and Debriefings

Each VAMC participating in the MTT program makes a commitment to a MTT project for implementation within days of the Learning Session and to be sustained for at least one year.

All MTT projects must involve a specific commitment to briefings and debriefings. The focus of this program is to improve face-to-face communication in real time. Briefings and debriefings provide the necessary context for teams of clinicians working together to plan their activities, assure that every member has the same understanding of what will be done, and allow team members to reflect on a recently shared experience (e.g., a surgical procedure, CPR event, or challenging clinic). A briefing in the clinical context is a conversation facilitated by a team leader to establish a shared understanding of the work and management of patient care in any health care environment. We distinguish three basic types of briefings in our Learning Sessions:

1. Interdisciplinary Patient-Centered Briefing (Rounds): An informative meeting with all members of an interdisciplinary team providing care to a specific patient. One application would be a **pre-operative briefing in the OR** suite involving all members of the surgical team. Another application would be conducting **interdisciplinary rounds in the ICU or Step-Down Unit** with all members of the interdisciplinary health care team, including patient and family, at the bedside. These are “work rounds,” rather than teaching rounds, with a primary focus on conversations between clinicians and the patient with family member or advocate. The purpose of these briefings is to communicate perspectives from different disciplines with the patient in real time on all relevant patient care issues to optimize the quality and safety of care.

2. Interdisciplinary Administrative Briefing: A meeting of professionals from different disciplines who work together in the same clinical environment to have interactive dialogue

about all relevant issues in the management of patient care on a clinical unit. These briefings have been implemented in the ICU, Medical-Surgical unit, OR, ED, and Ambulatory Clinics. Examples would include an ICU staff briefing at change of shift or a weekly meeting of surgical specialty services including SPD to review the equipment, instrument, personnel and other specific needs of all procedures scheduled for the following week.

3. Debriefing: A brief meeting after a procedure, event, or experience to reflect on what happened, to discuss lessons learned, and to make recommendations for improvements. This is an effort to maximize learning from a very recent experience. Examples of MTT projects include surgical teams debriefing their cases before leaving the OR suite, a Code Team debriefing a resuscitation event within 24 hours, and an Ambulatory Clinic starting their day by conducting a morning debriefing of the previous day.

MTT Project Implementation with Follow-Up and Support

One month after the Learning Session, members of the facility Implementation Team will have a semi-structured interview conducted by a member of the MTT Program Quality Improvement team. These interviews will be repeated at quarterly intervals up to one year from the Learning Session. There will be two distinct components of this interview:

- Process measure data collection regarding the frequency of MTT activities in the previous quarter. Examples include the percentage of surgical procedures on the targeted surgical service with briefings and debriefings or the number of days per week in an ICU that interdisciplinary briefing rounds were held.
- Narrative data collection regarding the VAMC experience implementing the MTT project. Qualitative data are collected for a deeper understanding of the implementation experience. Content covered in this interview will include the effect of MTT activities on staff and patient care, success factors with implementation, and barriers to implementation. We are interested in a more in-depth understanding of MTT implementation in a VA facility. Questions will be asked such as the following: “What went well?”; “What could have gone better?”; “What do you think about the value of MTT program implementation in the delivery of patient care?”

A series of observations in two selected participating facilities has been pilot-tested as a potential source of information for evaluating our program. Plans are under consideration for expanding the application of observational methods to assess MTT activities in our facilities.

Monthly group conference calls are facilitated by NCPS staff for voluntary participation among our facilities to share their experiences with the MTT program. The purpose of these calls is to leverage learning among the community of participating VAMCs by providing a forum for the exchange of ideas between facilities. MTT faculty members are available by phone or e-mail to each VAMC for consultation and guidance with project implementation. Moreover, staff from each participating facility can become enrolled in the MTT e-mail listserv to facilitate collaboration between participating facilities.

Stakeholder Analysis

There are several stakeholder groups that will benefit from a successful MTT program in the VHA.

Veterans – The primary beneficiaries from communication improvement among the clinicians providing their care are the patients themselves. If our hypothesis is true, veterans will benefit from better outcomes and realize greater patient satisfaction with their care as they observe enhanced communication and improved job satisfaction among professionals providing their care.

Health Care Professionals – Physicians, nurses, and allied health personnel will benefit from the satisfaction of improved outcomes for their patients, as well as from the satisfaction of less ambiguity and more clarity in communication with professional colleagues. The net effect of a successful MTT program will be more teamwork and collaboration resulting in enhanced job satisfaction among these professionals.

VAMC Senior Leadership – Senior leaders in VAMCs would be associated with improved outcomes of patient care, as well as enhanced staff and patient satisfaction resulting from better outcomes due to more effective communication. JCAHO National Patient Safety Goals would be achieved through improved communication. Senior leaders could accept public recognition for implementing applied CRM in their health care organizations, which has been specifically recommended by the Institute of Medicine.

Health Services Educators – Professional schools in medicine, nursing, and the allied health professions would benefit from accruing evidence for applied CRM improving communication between providers and patients in the safety and quality of health care delivery. Training and education in effective collaboration across disciplines is a missing element in the educational curricula of the health professions.

Health Services Researchers – A mixed methods approach to a comprehensive study of the effect of an applied CRM program in a large federal health system would be a major contribution to the health services research literature. Linking outcomes of data from administrative databases to structure and process measures in an evaluation of a widely disseminated CRM program would be unique and inform further research in this area. The rigorous application of quantitative and qualitative methods for a within subjects and between groups analysis will test our hypotheses in a comprehensive program evaluation. Our study will be a unique contribution to the HSR&D field.

Congress – If the MTT program is associated with improved outcomes of care for veterans and improved job satisfaction for VA professionals. Congress can declare that appropriations to the VHA returned value for public dollars and demonstrate the VA as a model of patient safety. Such a program could reap potential political capital and good will for the VA that could favorably influence future funding for VA programs.

Private Sector Health Systems – Evidence from this study for CRM applications in health care organizations may be generalized to the private sector. The VA is the largest health system in

the United States, with penetration to every state and major metropolitan area of the country. VA facilities are also present in rural America. Although 96% of veterans served by the VHA are male and older than the average US population, risk adjustment methodologies could augment the external validity of our program.

Program Evaluation

We are planning a quasi-experimental, mixed methods study of a longitudinal, prospective evaluation of VAMCs. This will be the first multi-level evaluation of CRM in a health system. Using Kirkpatrick's 1976 framework for training evaluation, as recommended by Salas, we will be analyzing quantitative and qualitative data at four levels¹⁴:

- Reaction – participant evaluation of the Learning Session
- Learning – attitudes and behaviors by health care professionals (before vs. after the Learning Sessions)
- Behavior – evidence for professionals adopting CRM behaviors
- Organizational Impact – outcomes of surgical care and surgical staff job satisfaction

The participant reaction to the Learning Sessions will be captured in the Employee Education System (EES) questionnaire administered to attendees immediately after the Learning Session. EES manages and certifies professional educational credits for VA employees attending educational sessions.

Learning will be captured by the *Safety Attitudes Questionnaire* administered before the commencement of the Learning Session and 12 months later. These data will be expressed in the six factor scores: safety climate, teamwork climate, working conditions, perceptions of management, job satisfaction, and stress recognition.

Behavioral change will be measured by the quarterly interviews with representatives of the facility Implementation Team. These interviews will capture both process and outcome measures of the MTT activities committed from the MTT project by the facility.

Organizational impact will be measured by changes in aggregate morbidity and mortality outcomes for surgical patients from the National Surgery Quality Improvement Program (NSQIP) in each facility. An additional outcome will be staff job satisfaction in the surgical work groups captured by the VA All Employee Survey (AES) Job Satisfaction Index. The AES is administered every two years on the even year.

The study design will include a “within subjects” and a “between groups” comparison of VAMCs. Data collection will span a period from September 2006 through June 2010. This period will encompass the national roll out of the program in the VHA which includes a one-year implementation period following the Learning Session in each VAMC. All 130 eligible VAMCs providing surgical services will enroll in the program by July 2009.

The “within subjects” comparison will be an aggregate analysis of VAMCs before and after the study intervention. The intervention will include two months of preparation and planning, the Learning Session hosted by a VA facility, and a one year MTT project implementation period.

The “before period” will be one year prior to the Learning Session and the “after period” will be one year following MTT project implementation.

The “between groups” comparison will be an aggregate analysis comparing VAMCs participating in the MTT program with those eligible VAMCs prior to their enrollment. The limitation of the “between groups” analysis in the second year of the study will be the reducing number of control group facilities that had not enrolled in the program. Data collection and analysis will occur for one year before the intervention period, during the intervention period (12 months), and one year following the intervention period (**Appendix E**).

Our mixed methods study design will employ the following measures:

1. Administrative Data
 - a. National Quality Improvement Program (NSQIP) – Annual data for all VAMCs
 - b. All Employee Survey Job Satisfaction Index
 - c. Agency for Healthcare Research and Quality Patient Safety Indicators – Selected PSIs derived from the VA Patient Treatment File based upon prevalence
 - d. Office of Quality Performance Surgical Infection Prophylaxis (SIP) measures
2. Questionnaire Data
 - a. Safety Attitudes Questionnaire – Baseline and follow-up six factor scores (beginning of Learning Session and 12 months after Learning Session)
 - b. Employee Education System Questionnaire after Learning Session
 - c. VA All Employee Survey – Job Satisfaction Index (years 2006, 2008, and 2010)
 - d. NCPS Patient Safety Culture Survey (years 2005 and 2010)
3. Qualitative Data
 - a. Semi-structured quarterly interviews
 - i. Process measure frequency of MTT activities
 - ii. Narratives of MTT implementation experience in VAMCs
 - b. Ethnographic observations of selected participating VAMCs
 - c. Narrative self-reports from participating VAMCs

The national roll out of the MTT program in the VHA commenced in January 2007. Surgical services, including the Intensive Care Units, are the primary focus of this program. However, the MTT program is available and relevant for clinicians in Ambulatory Clinics, Emergency Departments, Medical-Surgical units, and Long Term Care facilities.

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Appendix A**MTT Program Activity by Facility and Year****MTT Program 2003-2007**

2003									
VAMC hosting LS	Date LS	# LS	# Facilities	OR	ICU	PC Clinics	ED	Med Surg	LTC
1. Des Moines, IA*	Sep-03	1	1	1					
2. Detroit, MI*	Sep-03	1	1		1				
3. Boston, MA*	Nov-03	1	1	1					
4. Buffalo, NY*	Nov-03	1	1		1				
5. Black Hills, SD*	Nov-03	1	1					1	
6. Jackson, MS*	Dec-03	1	1		1				
Total 2003		6	6	2	3			1	
*Pilot Facilities									
2004									
7. Houston, TX	Sep-04	1	1	1					
Total 2004		1	1	1					

2005									
VAMC hosting LS	Date LS	# LS	# Facilities	OR	ICU	PC Clinics	ED	Med Surg	LTC
8. Atlanta, GA	Mar-05	1	1	1					
9. Bay Pines, FL	May-05	1	1	1					
10. Nashville, TN (Murfreesboro)	May-05	1	2	2					
11. Long Beach, CA	Aug-05	1	1	1					
12. Honolulu, HA	Aug-05	2	6			6			
13. Fargo, ND	Sep-05	1	1	1	1				
14. Minneapolis, MN	Sep-05	1	1	1					
15. St. Louis, MO*	Sep-05	1	1				1		
16. Las Vegas, NV	Sep-05	1	5			5			
17. West Haven, CT	Oct-05	1	1	1					
18. Providence, RI	Dec-05	1	1	1					
Total 2005		12	21	9	1	11	1		
*Modified LS									
2006									
19. West Palm Beach, FL	Aug-06	2	1	1	1		1		
20. Martinez, CA	Aug-06	2	1						1
21. Sacramento, CA	Aug-06	1	1	1					
22. San Francisco, CA	Sep-06	1	1	1					
23. Topeka, KS	Sep-06	1	1	1					
24. Leavenworth, KS	Sep-06	1	1	1					
25. Indianapolis, IN	Nov-06	1	1	1					
26. Brooklyn, NY	Dec-06	2	1	1	1				
27. New York, NY	Dec-06	2	1	1	1				
28. Danville, IL	Dec-06	2	1	1	1				
Total 2006		15	10	9	4		1		1

2007									
29. Loma Linda, CA	1-Jan-07	1	1	1	1				
30. San Diego, CA	1-Jan-07	2	1	1	1				
31. Seattle, WA	1-Jan-07	2	1	1	1				
32. Salisbury, NC	Feb-07	1	1	1	1				
33. Martinsburg, WV	Feb-07	1	1	1	1				
34. Durham, NC	Feb-07	1	1	1	1				
35. Los Angeles, CA	Feb-07	2	1	1	1				
36. Asheville, NC	Mar-07	2	1	1	1				
37. Beckley, WV	Mar-07	1	1	1	1				
38. Hampton, VA	Mar-07	2	1	1	1				
39. Richmond, VA	Mar-07	1	1	1	1				
40. Fayetteville, NC	Mar-07	1	1	1	1				
41. Northport, NY	Apr-07	1	1	1	1				
42. Tampa, FL	Apr-07	2	1	1	1				
43. Bronx, NY	Apr-07	1	1	1	1				
44. East Orange, NJ	May-07	1	1	1	1				
45. Wilkes-Barre, PA	May-07	2	1	1	1				
46. Lebanon, PA	May-07	1	1	1	1				
47. Wilmington, DE	May-07	1	1	1	1				
48. Philadelphia, PA	May-07	2	1	1	1				
49. Clarksburg, WV	Jun-07	1	1	1	1				
50. Altoona, PA	Jun-07	1	1	1	1				
51. Pittsburg, PA	Jun-07	2	1	1	1				
52. Erie, PA	Jun-07	1	1	1	1				
53. Salem, VA	Jun-07	2	1	1	1				
		35	25	25	25				
Total 2003-2007		69	63	46	34	11	2	1	1

Appendix B
Medical Team Training Program Application Form

APPLICATION FORM - MEDICAL TEAM TRAINING PROGRAM

The VA National Center for Patient Safety (NCPS) is offering the Medical Team Training (MTT) program for VA Medical Centers and Clinics. The purpose of this program is to improve outcomes of clinical care by implementing communication principles from Crew Resource Management (CRM) in the clinical workplace. This program, inspired by lessons learned from aviation and recommended by the Institute of Medicine, will address communication issues in clinical units such as the OR, ICU, Ambulatory Clinic, Med-Surg unit, ED, and other clinical areas. MTT assists VA facilities in achieving several JCAHO National Patient Safety Goals advanced by the Joint Commission for improving communication between health care providers.

For a VA facility to participate in the MTT program, a commitment must be made regarding preparation and planning, a Learning Session in the facility, and follow-up interviews with questionnaire administration for one year. The chronology for program participation is summarized in the table below.

TIMELINE	0	2 months	Learning Session	12 months
MTT PROGRAM MILESTONES				
Application	█			
Preparation & Planning		█		
Learning Session in VA Facility			█	
Follow-up Interviews Questionnaire				█

Application is accessible from NCPS web site: <http://vaww.ncps.med.va.gov/Education/MTT/index.html>. Please submit this form to the MTT Program Coordinator via e-mail.

Preparation & Planning begins 2 months prior to the scheduled Learning Session and involves the organization of a multidisciplinary Implementation Team representing professional disciplines in surgical services: Administrative Officer/Staff from Facility Director’s office, Chief of Surgery, Chief of Anesthesiology, OR Nurse Manager, ICU Nurse Manager, Medical Director of the ICU, SPD Director, and additional staff. The focus of the Implementation Team is to prepare for the Learning Session and to identify specific issues to be addressed by MTT project.

Learning Session is a full day of interactive learning about CRM applications to health care facilitated by NCPS faculty and hosted by the VA facility. The session begins with administration of the Safety Attitudes Questionnaire (SAQ)ⁱⁱⁱ. Interactive dialogue, faculty role play, and clinical teaching films introduce CRM applications in a clinical setting. Staff attendance for the Learning Session must be optimized by closing the OR to elective procedures (one day only), closing the surgery clinics (one day), and promoting the session within the facility. A minimum attendance of 30 participants with a mix of different disciplines is required for each Learning Session.

ⁱⁱⁱ Sexton JB, Helmreich RL, Neilands TB, Rowan K, Vella K, Boyden J, et al. The Safety Attitudes Questionnaire: Psychometric properties, benchmarking data, and emerging research. *BMC Health Services Research*. 2006; 6: 44. Available at: <http://www.biomedcentral.com/1472-6963/6/44/abstract/>.

The MTT project implementation begins immediately following the Learning Session. **The MTT project must include briefings and debriefings** in the OR and the ICU. The participating VA facility is committed to sustaining their MTT project for a minimum of one year, which includes the administration of the SAQ to medical, nursing, and allied health professionals in surgical services (and other relevant clinical units) one year after their Learning Session.

VA Facility Station Number and Location: _____

Date: _____

IMPLEMENTATION TEAM	Name	Job Title	E-Mail	Phone
Primary Contact (Team Member or Admin Asst. to Chief of Surgery)				
Administrative Officer/Staff (Facility Director's Office)				
Chief of Surgery				
OR Nurse Manager				
Chief of Anesthesiology				
Medical Director of the ICU				
ICU Nurse Manager				
SPD Director/Supervisor				
OR/ICU/Clinic staff (RN, MD, Allied Health) as needed				
Quality Manager				
Patient Safety Manager				
Education Coordinator (organizing Learning Session)				
Medical Media (support for Learning Session)				

Statement of Commitment to the MTT Program

We agree to participate in the Medical Team Training program in our facility and will

- assure minimum attendance of 30 participants for a Learning Session;
- close the OR to elective surgical procedures on the day of the Learning Session for OR staff (one day only);
- close surgery clinics on the day of the Learning Session (one day only);
- assure the implementation of briefings and debriefings in the OR for a minimum of one year;
- assure staff participation on the Implementation Team and completion of follow-up quarterly interviews;
- assure completion of the *Safety Attitudes Questionnaire* 12 months following the Learning Session.

We will work together to optimize the implementation of the Medical Team Training program in our facility.

Senior Physician Leader _____ Title _____
 Signature

Senior Nurse Leader _____ Title _____
 Signature

Facility Director _____ Date _____
Signature

NCPS contacts for MTT program:

Ed Dunn, Director of Policy & Clinical Affairs, NCPS

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Lisa Falzetta, Nurse Educator, NCPS

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Last revised 7/1/2007

Appendix C

NCPS Teaching Films for the Medical Team Training Program

CRM in Health Care Films

1. COPD Inpatient Scenario – poor communication
2. COPD Inpatient Scenario – effective communication
3. Pre-operative Briefing (Cardiac Surgical procedure)
4. Cardiac Surgery Procedure Scenario
5. Post-operative Debriefing (Cardiac Surgical procedure)
6. Code Scenario
7. Code Debriefing
8. Interdisciplinary Patient Centered Rounds (Briefing) in the ICU
9. Interdisciplinary Administrative Briefing in the ICU

SBAR Patient Hand-Off Films

1. OR-to-ICU transfer of surgical patient
2. RN-to-RN “Change of Shift” in the ICU
3. RN-to-MD “Change of Patient Condition” – Orthopedic Surgical Patient
4. RN-to-RN “Change of Shift” on Internal Medicine Hospital Unit
5. MD-to-MD “Sign Out” to on call surgeon on the inpatient Surgical Service
6. RN-to-RN Rapid Response Team for “Change of Patient Condition” on Medical Service
7. Hospitalist MD-to Primary Care MD for Inpatient-to-Outpatient transfer
8. RN-to-RN Medical unit admission from the Emergency Department
9. MD-to-MD “Sign Out” to on call team on the inpatient Medical Service

Appendix D
MTT Project Implementation Table (EXAMPLE)

Facility: _____ Medical Team Training Project Implementation Table

Facility Implementation Team Meeting: Day of week _____ Time of day _____
Frequency of meeting: every week _____ every other week _____ Next Meeting Date: _____

#	PROJECT OPTIONS	Clinical Unit & Service	MD/RN Team Responsible (Names)	Process Measure(s)	Target Process Measure(s)	Target Date for Process Improvement	Outcome Measure(s)	Target Outcome Measure(s)	Target Date for Outcome Improvement
1	Improve surgical care by implementing pre-operative briefings and post-operative debriefings in the OR suite with the entire surgical team present. REQUIRED	OR Surgical Service	OR Nurse Surgeon	% of Surgical Service procedures with a briefing and debriefing	50% of Surgical Service procedures	4 months	1) SIP-1 or SIP-2 2) On time start - 1st case of day 3) # "Waiting Time Events" per procedure 4) Beta blocker admin. 5) Glycemic control 6) Temperature control	1) 10% increase 2) 20% increase 3) < 2 per procedure 4) 25% reduction 5) 50% increase 6) 50% increase	1) 6 months 4 months for outcomes 2-6
2	Improve the quality of surgical care by implementing weekly interdisciplinary administrative briefings including reps from surgical services, OR Nursing, and SPD.	OR SPD	Chief of Surgery OR Nurse Manager SPD Director	% of weeks per month with an administrative interdisciplinary briefing	75%	4 months	1) # "Waiting Time Events" per surgical procedure 2) Nurse satisfaction 3) Surgeon satisfaction	1) < 2 2) > 4.0 (Likert) 3) > 4.0 (Likert)	4 months

NCPS Medical Team Training Program

3	Improve the safety of patient hand-offs from OR-to-ICU or to PACU through the implementation of SBAR Hand-Off protocol	OR ICU	Surgeon Intensivist ICU Nurse Manager OR Nurse Manager PACU Nurse Mgr	% of surgical patient transfers using SBAR hand-off protocol	50%	4 months	1) SIP-3 2) % of patients w/ "Morbid Events" within 2 hours of transfer 3) Nurse Satisfaction	1) 10% increase 2) 10% reduction 3) 50% increase	6 months
4	Improve quality of patient care in the ICU by implementing interdisciplinary patient-centered briefings (rounds) on a regular basis.	ICU	Intensivist ICU Nurse Manager	# Days per week	1 day per week	4 months	1) OMELOS 2) Patient Satisfaction (Quick Card or SHEP scores) 3) Nurse Satisfaction 4) Vent. Bundle compl. 5) Central Line Bundle 6) # Code Events/mo 7) Surg. Wound infect. 8) Boarding Time	1) 10% reduction 2) 10% increase 3) > 4.0 (Likert) 4) 25% increase 5) 25% increase 6) 20% reduction 7) 20% reduction 8) 25% reduction	6 months
5	Improve CPR performance of Code Teams with debriefing of Code Blue events.	ICU	ICU Nurse Med. Dir. ICU	% of Code Events with debriefings by the Code Team per month	50% of Code Events	4 months	1) % of Code Events with significant morbidity or mortality 2) Code Team member satisfaction	1) 10% reduction 2) 25% increase	6 months
6	Improve the safety of patient care by implementing a Fatigue Management Plan.	Service Unit	RN MD Administrator	Frequency of Plan Intervention in clinical workplace	% unit variable	4 months	1) Nurse satisfaction. 2) Physician satisfaction	1) > 4.0 (Likert) 2) > 4.0 (Likert)	4 months

On Time Start (1st case of day): patient in room at _____; Pre-op Briefing at _____

OMELOS: Observed minus expected length of stay

Boarding Time: time from transfer order to actual transfer from ICU

Satisfaction Scale: 1 = Very Dissatisfied 2 = Dissatisfied 3 = Neutral 4 = Satisfied 5 = Very Satisfied

<p>Morbid Events:</p> <ol style="list-style-type: none"> 1. Delay in Diagnostic Test (blood, urine, hemodynamic, imaging, etc.) 2. Unplanned return to OR 3. Delay in treatment 4. Blood glucose > 250 5. Temp < 96.8 degrees F (36 degrees C) or > 101.5 degrees F 6. Unplanned reintubation with ventilator support 7. Systolic BP > 200 or < 75 8. Hct < 20 9. K+ > 5.0 or < 3.0 10. Bleeding > 200 ml/hr 11. Dressing saturated with blood 12. Acute CNS deficit 13. Family not notified of patient arrival 14. Acute urinary retention 15. Acute psychological decompensation / delirium 16. CNS seizure 	<p>Waiting Time Events = events that could have been prevented by Pre-Op Briefings for any of the following:</p> <ol style="list-style-type: none"> 1. Surgical instruments 2. Surgical equipment 3. Imaging procedure 4. Personnel (surgical assistant, MD consultant, manufacturer rep, etc.) 5. Blood products 6. Medication 7. Fluids for surgical field 8. Pathology Frozen Sx report 9. Laboratory report 10. Miscellaneous needs not anticipated pre-op
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Facility Implementation Team (Names and Job Titles)	

Appendix E – Timeline for Program Evaluation

Medical Team Training Program Evaluation Timeline*

C05					C06					C07					C08														
Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
12 mos before Learning Session																													
3 month Learning Session Quarter												Annual Data Analysis & Summary																	
MTT Implementation & Follow-Up												Annual Data Analysis & Summary																	
12 mos after Learning Session year																													
					PRE		LS			F/U						F/U			F/U										
					SAQ														SAQ										
							MC			MC			MC			MC			MC			MC			MC				
12 mos before Learning Session															Annual Data Analysis & Summary														
3 month Learning Session Quarter															Annual Data Analysis & Summary														
MTT Implementation & Follow-Up															Annual Data Analysis & Summary														
12 mos after Learning Session year																													
					PRE - Preparation & Planning for Learning Session					LS - Learning Session					F/U - VAMC Quarterly Interviews x 1 year														
					MC - Monthly Conference Calls with participating VAMCs																								
					SAQ - Safety Attitudes Questionnaire (before and 12 mos. after)																								
					Annual Data Analysis & Summary = Questionnaires (SAQ, AES, PSCS), Interviews, % or # Briefings & Debriefings, FAS, NTR																								
					AES - All Employee Survey VA					PSCS - Patient Safety Culture Survey					FAS - Facility Achievement Score					NTR - Nurse Turnover Ratio									

- Implementation of program national roll out: January 1, 2007 to July 1, 2009
All data collection will be complete by July 1, 2010