Remote Support to Deployed Medical Response Teams: Virtual Trauma Team Support to Sri Lanka

Background and Statement of the Problem

As humanitarian missions expand to include Active Duty military forces, joint teams of military medical professionals will be deployed to remote locations throughout the world, with limitations on access specialty care-professional consultation and diagnostic services. Current developments in portable technology, global telecommunications bandwidth availability, and telemedical protocols and procedures can enable these remote medical response teams to maintain contact with their normal consultative sources, even while deployed to remote and challenging locations.

One such medical mission is the Blast Resuscitation and Victim Assistance (BRAVA) mission to Sri Lanka. This mission was designated to send a Joint military medical team quarterly to assist Sri Lanka physicians in dealing with the extensive war time casualties generated by the current conflict with the LTTE Tamil Tiger insurgency.

One such BRAVA mission has already been completed in October of 1998 preceded by the Baker Serum exercise in September of 1998. During these operations, numerous needs unique to the deployed military medical mission were identified. Among these needs were requirements for remote sub-specialty consultation, teleproctored surgery for both assistance with cases and education for the stay behind surgical team.

Needs

Pre Visit Assessment
Scheduling
Pre-Planning
Case Management Planning
- Equipment
- Personnel

Access to Specialists (Medical Areas):
- Teleproctored Surgery
- Psychiatric/Mental Health (biofeedback for pain management; therapy for body image changes)
- Orthopedics (for rehabilitation)

Consultation between missions
Case Follow-Up
- Two Part Surgery

Research Questions and Hypothesis

Will the use of a virtual multidisciplinary trauma team in support of Sri Lanka mission increase medical knowledge access, improve clinical outcomes (acute and

rehabilitative services), improve the quality of care, and reduce costs as compared with the current mode of operation?

Will the use of COTS/GOTS hardware and software (multimedia with remote capability intended to augment the virtual team) be feasible to implement, deploy, and operate? Will it provide the capability to fill the intended need?

Will the remote medical system in support of the Sri Lanka mission enhance the quality and content of educational material (for distance learning) as compared with the current mode of operation?

Will the remote system in support of the Sri Lanka mission enhance the consultative and educative assistance for disaster management needs as compared with the current mode of operation?

Project Description (proposed solution)

The goal of this effort is to create an indigenous medical capability to treat and rehabilitate land mine survivors. Through store-and-forward modality and remote triage technique, this effort will prototype a multidisciplinary trauma team with the intent of improving clinical outcomes. Remotely located military medical teams can be supported through the combination of COTS and GOTS technology, and proven telemedicine consultation protocols and procedures. This support can consist of, but not be limited to; facilitating pre-visit assessment, scheduling, planning, teleproctored surgery, consultation from deployed team members to their existing consultation and referral patterns, and improved follow up after the teams depart.

Store and forward, remote triage.

Capabilities:

- Pre-visit consultation
- Digital Imagery for triage
- Patient database
- Follow up comments

Benefits:

- Pre-visit assessment
- Scheduling/planning of cases
- Identify Equipment Needs
- Personnel allocation and skill sets

Consultation between missions
Case Follow Up
Two part surgery planning

Basic System:

(Remote Site)
Multi Media PC with Audio/Video Capture
Digital Camera
Flatbed Scanner with Transparency Adapter
INMARSAT II with video camera
Modem for dialup to TAMC
Printer

(TAMC)
Secure Server at TAMC
Customized Software
Standard client computers for review

Project framework would include:

Distance learning (e.g., grand rounds from Sri Lanka to Tripler with CEUs/GMEs; content for inclusion in Akamai telemedicine curriculum project);
Remote access to medical specialists (e.g. deployed staff would have access to Tripler specialists for consultation/guidance);
Disaster management via consultative & educative support from the Center of Excellence for Disaster Management and Humanitarian Assistance, Tripler AMC, HI

Proposed Project Timeline (Chronology)

Receive Funding
Prototype system
    Develop WAN connectivity
    Develop computing platform
Develop software
    Develop video capture hardware
    Provide custom cases
Contract software development
Test System locally
Send advance tech team to BRAVA mission location with prototype
Test system remotely
Incorporate lessons learned and changes
Deploy with BRAVA mission to Sri Lanka
Publish results: September, 2000

Performance Objectives/Deliverables

Objectives:

Develop a proof of concept for a virtual multidisciplinary trauma team in support of Sri Lanka mission. Trauma team would focus on both acute & rehab type services.

Demonstrate the feasibility of multimedia, virtual, clinical support for deployed military medical teams through COTS/GOTS hardware and software to virtually augment the team.

Based on the educational content of the virtual trauma team experience and efforts, develop and demonstrate distance learning and educational capabilities and applications.

Develop a disaster management support capability (consultative and educative) to support medical personnel, workers, and victims involved in mine disaster situations.

Deliverables:

1. Hardware and software prototype with all technical specifications
2. Publication of results and lessons learned (in the areas of: technical, medical, educational, disaster management)
3. Process and procedures documents (detailed process and methodology to enable expanded or continued use)
4. Educational guidelines and curricula (including UH Telemedicine curriculum)
5. Clinical outcomes analysis and report
6. Disaster management support capability specific to mine disaster application

Partners/Collaborators:

Partners would include:

Institute of Surgical Research
Center of Excellence for Disaster Management and Humanitarian Assistance, HI
TAMC, HI
USUHS, MD
MRMC, MD
University of Hawaii