

Committee on Tactical Combat Casualty Care Meeting Minutes 4-5 August 2009

Hawthorne Suites
830 N St. Mary's Suite
San Antonio, TX 78205

Attendance:

CoTCCC Members

COL Frank Anders	U.S. Army	_____
Dr. Jim Bagian	Dept of Veterans Affairs	_____
Dr. Brad Bennett	USUHS	_____
Dr. Howard Champion	USUHS	_____
SFC Miguel Davila	USASOC	_____
COL Brian Eastridge	JTTS	_____
COL Warner Farr	SOCCENT	_____
SOCM Shawn Johnson	NSWG-2	_____
CAPT Ken Kelly	Tripler AMC	_____
Dr. James Kirkpatrick	DCDD	_____
LTC Russ Kotwal	75 th Ranger Regiment	_____
MAJ Robert Mabry	AMEDD C&S	_____
Dr. Norman McSwain	Charity Hospital/PHTLS	_____
MSG Harold Montgomery	75 th Ranger Regiment	_____
Dr. Mel Otten	Univ of Cincinnati	_____
Mr. Donald Parsons	DCMT	_____
Dr. Peter Rhee	Univ of Arizona	_____
HSCS Glenn Royes	Deployable Ops Group, USCG	_____
HMCM Eric Sine	JSOMTC	_____
Mr. Rick Strayer	JSOMTC	_____

Defense Health Board Staff

CDR Edmond Feeks	Defense Health Board	_____
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CoTCCC Guests

SSG Peter Biggane	1-1 SFG (A)	_____
COL Ron Brisebois	Canadian Forces	_____
Mr. Will Chapleau	PHTLS	_____
Mr. Vic Convertino	USAISR	_____
Ms. Jenna Davis	CNA	_____
LTC Sundeep Dhillon	UK MOD	_____
COL Jonathan Jaffin	OTSG	_____
COL Stephen Flaherty	WRAMC	_____
LTC Larry France	USA MEDCOM	_____
HM1 Jeremy Franco	DMRTI	_____
MAJ James Fulton	DMSB	_____
Dr. Bill Fabbri	FBI	_____

Mr. Dom Greydanus	JTTS	_____
Lt Col Doug Hodge	DMSB	
SFC Michael Hutt	AMEDD C&S	_____
Mr. Kevin Joyner	MCSC	_____
Dr. Bijan Kheirabadi	USAISR	_____
HM2 Watson Lindor	Naval Hospital Pensacola	_____
Mr. Peter Marquez	DMRTI	_____
Dr. Claudia McDonald	TAMU-CC	_____
Mr. John Miles	FMTB	_____
HM1 Scott Moore	Naval Hospital Pensacola	_____
Mr. David Morehouse	DMSB	_____
Mr. Brent Parquette	Lucas County EMS	_____
Mr. Larry Simmons	JTTS	_____
Ms. Mary Ann Spot	JTTS	_____
MAJ Bart Thomas	DMRTI	_____
SSG Christopher Waiters	AMEDD C&S	_____

Tuesday 28 April - CoTCCC Open Session

Introduction and Opening Remarks

Dr. Frank Butler

The chairman asked members and guests to introduce themselves. The committee was informed that the next quarterly meetings will be in Denver, CO on 3 and 4 November and in San Antonio, TX on 9 and 10 February. Dr. Butler requested that the committee look for medics and corpsmen to do presentations at upcoming meetings on combat casualty scenarios that they have experienced.

The Core Board of the Defense Health Board (DHB) will hold its next meeting on 17-18 August 2009.

A tri-fold TCCC flyer was created by Mr. Larry Simmons at the U.S. Army Institute of Surgical Research (USAISR) to outline what the CoTCCC does and to provide contact information. This flyer has been forwarded electronically to CoTCCC members.

CDR Ed Feeks noted that both the CoTCCC and the rest of the Defense Health Board fall under the Federal Advisory Committee Act. The CoTCCC's mission is to advise the Assistant Secretary of Defense for Health Affairs and the Service Surgeons General about battlefield trauma care for our wounded warriors. All actions and recommendations that the CoTCCC makes are reviewed by the Trauma & Injury Subcommittee of the DHB which may vote to accept, modify, or disagree with the recommendations of the CoTCCC. Both the recommendations of the CoTCCC and those of the Trauma and Injury Subcommittee are then be forwarded to the Core Board of the Defense Health Core Board for review and consideration.

Combat Casualty Scenario Presentation SSG Peter Biggane

SSG Biggane presented a recent casualty scenario from the Philippines where both a Filipino citizen and a member of the Abu Sayyaf were injured. The two casualties (ages 16 & 17) were brought to a local hospital, which had been locked and vacated due to mortar attack threats. The team sergeant and SSG Biggane, both trained in TCCC, assisted the casualties. Since the hospital was locked, they were unable to get any medical supplies from there and all supplies were obtained from the team aid bags. Eventually a hospital staff member did arrive and opened the hospital so that additional care could be provided. The estimated transport time to a medical treatment facility from the area of operations was 90 -135 minutes by either ground or air.

The first casualty was a 16-year old male with a gunshot wound to the left abdomen and bilateral shrapnel wounds to the legs. There was no active hemorrhage or respiratory distress. He was alert and oriented, but did not speak English, so an interpreter was used to assist in the casualty's assessment. A complete head to toe assessment was conducted and no other injuries were noted. 500 cc of Hespan were administered IV and his wounds were dressed.

The second casualty was a 17-year old male who had shrapnel from a 40mm grenade to the right mid axillary area at about the 8th intercostal space. He had a gunshot wound above the right flank. This casualty also did not speak English and an interpreter was used to help assess the patient. The casualty was alert and oriented but lethargic. Blood pressure was 80 palpable. The TCCC fluid resuscitation protocol was initiated for his shock. Oxygen was also administered.

Due to the long transport time and the medic not being able to accompany the casualty, the decision was made to not transport the casualty until he was able to hold a systolic of at least 90mmHg. He went in and out of consciousness for the next two hours and finally responded with an improved mental status. Additional delays in evacuation were encountered and a total of approximately 4 hours was spent treating this casualty and waiting for transport.

SSG Biggane's observations, recommendations, and lessons learned were: 1) Consider other fluid choices and not be too aggressive with fluid infusion if the casualty has active hemorrhage; 2) Inspect prior treatments. The IV started by the host nation medic was not patent; 3) The oxygen was depleted after 90 minutes; 4) Better cross training in shock recognition needs to be implemented; 5) All team members should be able to take and record vital signs as well as to provide medical care to several patients in one casualty scenario if required; 6) Civilians and foreign counterparts were not effectively controlled and interfered with treatment at times. The media was allowed into the treatment area without the medic's being aware.

SSG Biggane raised the following questions for consideration: 1) Would a crystalloid have been a better fluid for a casualty with an uncontrolled hemorrhage since

hetastarch is known to interfere with clotting; 2) Would hypertonic saline with or without dextran have been more beneficial; and 3) Would hypertonic saline have been useful if the casualty had TBI in addition to his other injuries?

TCCC Update

Dr. Frank Butler

Dr Butler discussed the TCCC brief given to Mr. Herbert Coley, the Chief of Staff of the Army Medical Command on 29 June 2009. A brief history of TCCC was presented, as were some of the recent publications in the medical literature that have documented the success of TCCC in saving lives on the battlefield. The TCCC program has been supported by the U.S. Special Operations Command, the Navy Bureau of Medicine and Surgery, the Surgeon General of the Army, the U.S. Army Institute of Surgical Research, and the Joint Theater Trauma Service. CoTCCC deliverables for the past year have included:

- Updating the TCCC Guidelines
- Briefing the Defense Health Board on TCCC changes and recommendations
- Making the TCCC training curriculum available on both the Military Health System and the Prehospital Trauma Life Support (PHTLS) websites
- Writing 12 chapters for the upcoming Seventh Edition of the PHTLS Manual
- Creating a journal watch for TCCC-related publications
- Updating the list of TCCC research priorities

Changes to the TCCC Guidelines are made by the CoTCCC based on: 1) published prehospital trauma literature; 2) direct input from combat medical personnel; 3) feedback provided to service medical lesson learned centers; 4) new information coming from military medical research facilities; and 5) expert opinion from DoD and civilian trauma subject matter experts.

A request for information (RFI) from Chairman Murtha was received by the Navy Surgeon General at the HAC Defense Subcommittee hearing on 21 May 2009. The RFI was as follows: "How have you changed the training and equipment for the combat lifesaver compared to training and equipment carried prior to Operation Iraqi Freedom and Operation Enduring Freedom?" The answered subsequently provided by Headquarters, U.S. Marine Corps to that question stated that the most significant improvement in this area has been the widespread use of Tactical Combat Casualty Care. The re-introduction of the tourniquet on the battlefield was noted to be the single most successful TCCC innovation. COL John Kragh from the USAISR has estimated from his extensive research on tourniquet use in Iraq and Afghanistan that as many as 2000 lives may have been saved with tourniquets in these conflicts.

The use of tourniquets is also expanding in the civilian sector. An email from Dr. Keith Gates at the University of Texas Health Sciences Center in Houston dated 16 June 2009 noted that a tourniquet was used for a patient with a chainsaw injury to the

left arm with major venous bleeding. After tourniquet application, the patient arrived at the ED hemodynamically stable with a heart rate of 60 and blood pressure of 114/65. There have been 19 successful cases of tourniquet and hemostatic agent use at his hospital since they were introduced approximately 8 months ago. This is in contrast to 9 patients with compressible hemorrhage who presented in the months prior to the implementation of tourniquets and hemostatic agents and had less favorable outcomes.

An email from Lt Col Hodge at the Defense Medical Standardization Board (DMSB) dated 17 July 2009 noted that multiple units in the DoD are still buying WoundStat as recently as June 2009 despite the safety concerns with this product. Combat Gauze is currently the only hemostatic agent in DEPMEDS and the only Joint hemostatic agent of choice. The DMSB is planning to assign the code "T" to WoundStat which means the product is no longer authorized for procurement, issue, or requisition. All hemostatic agents other than Combat Gauze will be assigned Code "N" (discontinued item no longer authorized for issue). Individual units can still buy these hemostatic agents if they want, but they will need specific approval from service inventory managers.

BUMED Instruction 1510.23C entitled "Hospital Corpsman Basic Skills - Tactical Combat Casualty Care Program" was signed on 24 June 2009. It directs that corpsmen complete web-based TCCC training within 90 days of reporting to a BSO-18 command. All deploying corpsmen will get the standardized TCCC training course within 180 days of deployment.

Dr. Butler discussed a case reported by Dr. Mel Otten regarding a recent hostage scenario where the suspect shot himself in the left chest, resulting in a sucking chest wound. The Asherman Chest Seal that was applied first did not stick and Dr. Otten then used EKG pads to successfully occlude the open pneumothorax. The suspect survived.

The Center for Disease Prevention and Control (CDC) is sponsoring an effort to accelerate the transition of military advances in prehospital trauma care to the civilian sector. The CDC is requesting that the CoTCCC assist in this project. Several meetings a year for the next two years are being planned to accomplish this goal. MAJ Mabry, Dr. McSwain, Dr. Champion, Dr. Johannigman, Dr Bennett, and SOCM Johnson all volunteered to help with the CDC effort.

Practical Aspects of TCCC Training

HM1 Scott Moore/HM2 Watson Lindor

HM1 Scott Moore and HM2 Watson Lindor presented a talk on how the Naval Hospital in Pensacola, FL teaches TCCC. TCCC training was started there in August 2007. One of the biggest hurdles was obtaining training equipment and supplies. There were approximately 30 corpsmen in the first training session. The instructors consisted of 2 chiefs and 8 other corpsmen. Training is done in a field hospital tent set up outside the hospital.

The class begins with a pre-test and a brief introduction to TCCC. The average pre-test scores range from 55-65 percent. Students are taught using the standardized TCCC training curriculum available on the MHS and PHTLS websites. The course takes 3 days, including the final practical session.

The practical TCCC scenario was initially done outdoors, but is now done in a second tent. A simulated combat zone is created with light strobes, smoke, and simulated gunfire. Instructors play the parts of Marines and combat leaders while one instructor follows the TCCC student as he or she completes the practical exercise using a manikin with simulated injuries. This includes a twenty-five yard drag of a 200 lb manikin in the simulated combat zone with the student in full gear while administering medical care.

The training concludes with a final test and a certificate ceremony. Over the past two years, the Naval Hospital has trained 631 corpsmen. HM1 Moore noted that surveys show that the TCCC training course at the Naval Hospital compared favorably with TCCC instruction that the corpsmen have received in other courses.

TCCC in UK Special Operations Forces

LTC Sundeep Dhillon

LTC Dhillon described the British counterpart to TCCC known as Battlefield Advanced Trauma Life Support (BATLS). The goal is to have the casualty receive BATLS within the first hour and to have him or her transported to a surgical facility within two hours. UK Special Forces have adopted the three phases of care concept used in TCCC and are using CAT tourniquets and Combat Gauze. SF medics undergo a 12-week Patrol Medic course that includes BATLS, live-tissue training, and a hospital rotation.

UK forces are also providing their operational physicians with specialized training in battlefield trauma care and have formed Medical Emergency Response Teams (MERTs) which are capable of responding to casualty events within 24 hours. They have adopted the 1:1 Packed Red Blood Cell (PRBC) to plasma transfusion ratio used by U.S. forces for casualties requiring massive transfusion. Among the UK's ongoing combat trauma research efforts is a hybrid resuscitation protocol that is designed specifically for casualties suffering from blast trauma.

TCCC Training - TRADOC Perspective

MAJ Bob Mabry

On behalf of COL Karen O'Brien, the Army Training and Doctrine Command (TRADOC) Surgeon, MAJ Mabry summarized the brief that was given to the Army Medical Department leadership about proposed changes to TCCC training in the Army. There is currently no formal program of instruction to ensure that combat leaders understand the principles of battlefield trauma care or know how to plan for a casualty

response within their units. As many as 20 percent of U.S. combat fatalities have been reported to be potentially preventable in recent papers in the medical literature. Casualty response training for leaders should emphasize avoiding preventable deaths, minimizing additional casualties, tactical extraction and movement of casualties, and realistic medical scenarios during battle drills. The 75th Ranger Regiment is currently using this approach and has reported no preventable deaths in 8 years of sustained combat operations.

There will be a brief to the TRADOC Commander in the near future to discuss this proposed change as well as the proposed removal of IV training from the combat lifesaver course.

PHTLS 7 Update

Dr. Steve Giebner

Dr. Geibner reviewed the progress of the upcoming Seventh edition of the PHTLS manual. Drafts of all twelve chapters have been received. The target publication date remains September 2010. The following chapters have been provided by the CoTCCC and will be included in the Seventh edition:

- Introduction to TCCC – Dr. Frank Butler
- Care Under Fire - SOCM Shawn Johnson
- Tactical Field Care – Dr. Frank Butler
- TACEVAC Care – Dr. Jay Johannigman & SMSgt Tom Rich
- Triage - COL Paul Cordts
- CASEVAC, MEDEVAC and Aeromedical Evacuation - Dr. Jay Johannigman & SMSgt Tom Rich
- Injuries from Explosives - Dr. Howard Champion
- Medical Support of Urban Operations - MAJ Bob Mabry
- Ethical Considerations for Combat Medics - Dr. Frank Anders
- Treatment of Burns in TCCC – LTC Booker King
- Theater Medical System - COL Brian Eastridge
- Pre-Mission Casualty Response Planning – LTC Russ Kotwal & MSG Harold Montgomery

MEDCOM TCCC Care Documentation Initiative

LTC France

LTC France presented the Army Suicide Prevention Task Force (ASPTF) Initiative D2.3.5 which deals with Point of Injury Care Documentation and Trauma Registry tracking. Currently, DD 1380 is the designated form on which to record battlefield trauma care, but less than 5% of trauma patients have documented point-of-injury care. The casualty card developed by the 75th Ranger Regiment has been used successfully in combat since the start of OEF. This was the form recommended for use

by the CoTCCC in 2007 and subsequently endorsed by the Defense Health Board. The Army is moving forward with the fielding of this new TCCC Casualty Card.

LTC France noted that his working group believes the best course of action is to endorse and field the TCCC Casualty Card. An All Army Activities message will be needed to implement the card and a draft of this message is being staffed at present. General Chiarelli, the Vice Chief of Staff of the Army, is the chair for the ASPTF and has been briefed on the Working Groups progress and proposed solutions.

The ASPTF is also evaluating options for developing a capability to track unit injuries and first responder care similar to the Rangers' Prehospital Trauma Registry. Since 2001, components of the 75th Ranger Regiment have been continuously deployed to either OEF or OIF. In 2007, the Regiment developed a web-based prehospital trauma registry that captures the injuries sustained and the care rendered by the units' combat medics. This system has provided the most complete information available to date on prehospital combat casualty care rendered in Iraq and Afghanistan. Current challenges include finding an informatics architecture within which to place the new system, gaining approval for this addition, beta-testing the software in other Army units, and training Soldiers in its use.

ResQGARD I

Mr. Brent Parquette

Mr. Parquette demonstrated the ResQGARD, which was developed by Advanced Circulatory Systems, Inc. It is an impedance threshold device (ITD) designed to enhance circulation in spontaneously breathing patients by externally increasing resistance to inspiration. This results in an increased negative intrathoracic pressure during inspiration, which increases central venous return and cardiac output, lowers intracranial pressure, and increases cerebral blood flow. The device has an inspiration port that can connect to a facemask or mouthpiece, an exhalation port, an atmospheric pressure sensing valve, and an oxygen port for supplemental oxygen. The ResQGARD has been evaluated in over 25 clinical and animal studies.

One study looked at pigs that were bled to 50% of their normal blood volume. Eight pigs breathed through an ITD while the other 8 served as controls and were simply observed for 90 minutes. None of the control animals survived while 7 of the 8 ITD animals survived. Five of the seven surviving study animals appeared normal neurologically after recovery.

In a Lucas County, OH, study in which the ResQGARD was used on 54 hypotensive patients, systolic blood pressure was noted to rise from 81 to 108 mmHg with use of the ResQGARD, but most of the patients received IV fluids as well. Systolic blood pressure rose from 81mmHg to 101 mmHG in the six patients who did not receive IV fluids. All but two patients tolerated the increased breathing resistance imposed by the ITD. Mr. Parquette believes that the ResQGARD could be of benefit in treating

combat casualties, especially in cases where bleeding has been controlled but the casualty is in shock. The device was noted to be contraindicated in patients with uncontrolled hemorrhage.

ResQGARD II

Dr. Mel Otten

Dr. Otten provided recommendations regarding the ResQGARD on behalf of the CoTCCC New Technology Subcommittee. The ResQGARD is similar to the ResQPOD, which has been found to be beneficial in cardiac arrest patients that are receiving CPR. As noted previously, the ResQGARD is used for spontaneously breathing patients and can be used with a face mask or with supplemental oxygen.

The subcommittee agreed that the ITD is good for CPR, but has not yet been shown to be of benefit in trauma patients, especially those with non-compressible hemorrhage. Several CoTCCC members noted that the ITD may prove to be beneficial if the appropriate studies are performed, especially in TBI patients and in patients with hemorrhagic shock whose bleeding has been definitively controlled, such as those with extremity hemorrhage after a tourniquet has been applied.

Future Strategies for Testing of Hemostatic Agents

Dr. Bijan Kheirabadi

Dr. Kheirabadi reviewed the issues covered in a U.S. Army Institute of Surgical Research workshop held on this subject on 30 June 2009. Some of the qualities desired in newly developed hemostatic agents being considered for use in treating combat casualties include:

- able to cover large wound areas
- able to stop bleeding from all wound configurations
- able to be applied rapidly
- no additional pain on application
- no acute or long term adverse effects
- no risk to medics
- long shelf life
- inexpensive
- clearly more effective than the currently fielded hemostatic agent
- gauze-type agent rather than powder

A standardized model of efficacy was agreed upon at the workshop, which included tri-service representation. The 6 mm femoral arteriotomy model was chosen as the best injury for this purpose. This model is lethal in control animals. The combined carotid-jugular injury that was used to test WoundStat was chosen as the best safety model. Additional details regarding both the efficacy and safety models will be available in the near future.

The purpose of selecting standardized models is to have common denominators for studying newly developed hemostatic agents that will provide a valid basis of comparison for research performed at multiple research laboratories both within and external to the DoD. The goal is to ensure that all new products are evaluated in a way that will allow DoD decision-makers to obtain the best possible information from hemostatic agent testing and to ensure that all products are evaluated in a similar manner.

Airway Management Case Report

MAJ Bob Mabry

A brief case study was presented of an individual in a vehicle hit by an improvised explosive device. The casualty suffered a catastrophic injury to the lower abdomen and pelvis, to include transection of the abdominal aorta. He received emergency treatment that included a cricothyroidotomy and a sternal intraosseous infusion. In the postmortem examination, the cricothyroidotomy device was found to be outside the trachea.

TCCC Training for Allied Militaries

Dr. Frank Butler

Allied countries that have recently requested TCCC Training include Sweden, Spain, Portugal and Argentina. Options for allies wishing to obtain TCCC training at this point are: 1) use the MHS website to download the curriculum and conduct the training using personnel from their military; 2) coordinate a military-to-military training request through the U.S. Embassy in their country; or 3) obtain the training through a commercial TCCC training vendor. Recent attempts to provide TCCC training to the Spanish Special Forces were unsuccessful because of the complexity of the military request process and fiscal control issues regarding transfer of funds from a foreign country to U.S. military units.

TCCC Training for Allied Militaries: PHTLS Option

Mr. Will Chapleau

Mr. Will Chapleau proposed that the PHTLS organization could play a valuable role in this process. PHTLS has a long history of partnering with the CoTCCC to help improve prehospital trauma care. They also have the infrastructure to organize courses, enroll students, certify and coordinate instructors, provide course completion certificates, and maintain an up-to-date registry for both TCCC providers and instructors. Further, they recognize the need for TCCC training for both allied militaries and tactical law enforcement agencies and are willing to help in providing it.

The primary concern at this time is that, while PHTLS has a large cadre of PHTLS instructors in over 40 countries, it does not have instructors who have been trained by the military and certified as TCCC instructors.

One approach to overcome this shortfall would be for the military to host a TCCC instructor course for PHTLS instructors. This core group could then proceed to conduct additional TCCC instructor courses as needed for PHTLS to conduct requested TCCC courses. Mr. Chapleau is willing to provide assistance in proceeding with this approach and coordinating the initial TCCC course for PHTLS faculty. This was felt to be a good course of action and plans are underway to organize and conduct this course. Dr. Steve Giebner will be coordinating this effort from the CoTCCC end.

Wednesday 4 August – CoTCCC Internal Session

Documentation of Care in TCCC

LTC Russ Kotwal

LTC Kotwal provided further discussion of the TCCC Casualty Card. The importance of documenting Point of Injury care was emphasized; this information is critical for entry into the casualty's medical record, for command visibility on injuries and outcomes, and for process improvement. The trauma registry is different than the electronic medical record, but information in the registry may be used to provide essential information to the electronic medical record. LTC Kotwal emphasized that the line leadership must take a proactive role if the effort to improve documentation of care in TCCC is to be successful.

TCCC Logo

MSG Harold Montgomery

At the request of CoTCCC members, Dr. Butler had the TCCC logo modified with an assist from Dr. Cheryl Casey in Pensacola. The proposed new logo has the TCCC lettering changed from red to white and has a lighter background color. Additional feedback from CoTCCC members on the new logo requested that the background be changed to a color that approximates desert sand and that the pictures of the injured Soldier and the medic be lightened somewhat. Dr. Butler will take this for action.

CoTCCC Charter

Dr. Frank Butler

The Membership and By-Laws Subcommittee of the CoTCCC met earlier in the week to make a few last additional proposed modifications to the charter. The CoTCCC reviewed the updated draft of the charter at today's session.

The two most significant changes to the charter (now officially a "Mission Statement" are: 1) it has been changed to reflect the CoTCCC's new position as part of

the Defense Health Board and to comply with Defense Health Board by-laws; and 2) the CoTCCC has been expanded from 36 to 42 members with the addition of 6 new ex-officio positions. The ex-officio members are position-based and the CoTCCC membership will be held by the individual currently filling that position.

The committee voted to approve the new Mission Statement with 35 votes to accept and one abstention. The Mission Statement was then forwarded to Dr. John Holcomb, the Chairman of the Trauma and Injury Subcommittee of the Defense Health Board, for approval and signature. A signed copy of the new CoTCCC Mission Statement is attached to these minutes as a separate electronic file.



23 Oct 09

Frank K. Butler, M.D.
CAPT MC USN (Ret)
Chairman

Date

Committee on Tactical Combat Casualty Care