MEDICAL DIRECTION COMMITTEE
1041 Technology Park Dr, Glen Allen, Virginia
Conference Rooms A and B
April 10, 2014
10:30 AM

Members Present:	Members Absent:	Staff:	Others:
Marilyn McLeod, M. D. - Chair	George Lindbeck, M.D.	Gary Brown	Chad Blosser
Asher Brand, M.D.	Nael Hasan, M.D.	Michael Berg	Cathy Cockrell
Theresa Guins, M.D.	Charles Lane, M.D.	Warren Short	Adam Alford
E. Reed Smith, M.D.	Christopher Turnbull, M.D.	Greg Neiman	Tom Ezell
Allen Yee, M.D.		Debbie Akers	John Dugan
Paul Philips, D.O.		Scott Winston	Randy Geldreich
Scott Weir, M.D.			
Stewart Martin, M.D.			
Forrest Calland, M.D.			
Cheryl Lawson, M.D.			
Chief Eddie Ferguson			

Topic/Subject		Discussion	Recommendations, Action/Follow-up; Responsible Person
1. Welcome		The meeting was called to order by Dr. McLeod at 10:30 AM	
2. Introductions		Committee remained the same. No introductions were necessary.	**Meeting Sign-in Roster Attachment "A"**
3. Approval of Agenda			**Approved by consensus**
4. Approval of Minutes		Approval of minutes from the January 9, 2014 meeting with revision that was distributed on April 9, 2014.	**Approved by consensus**
5. Drug Enforcement Administration (DEA) & Board of Pharmacy (BOP) Compliance Issues		Michael Berg to address during his report.	
6. New Business			
A	Zoll Life Vest Demonstration – Tom	Presentation by Tom Ezell, Zoll Life Vest representative, on a new device that is available to patients in need of a potential life saving intervention. Committee posed questions and Dr. Weir stated that there was an excellent	

Topic/Subject		Discussion	Recommendations, Action/Follow-up; Responsible Person
	Ezell	uTube video available produced by VCU to provide training to the EMS community. Request was made that the manufacturer notifies the EMS systems in the areas that providers are being discharged home with the device. Appreciation expressed to Mr. Ezell for the presentation by Dr. Marilyn McLeod. Handout distributed.	**Attachment 'B'**
7. Old Business			
A	MIHP - Community Paramedicine – Marilyn McLeod, MD	Dr. McLeod opened the floor for discussion on the guidance document produced by the Office of EMS and the Office of Licensure and Certification concerning the need to become licensed as a home health organization to provide the proposed services. Committee feels that the document does not address the transport of non-emergent patients that are performed every day by EMS systems throughout Virginia. Dr. McLeod requested an opinion from Gary Brown on how to move forward stating that she felt Virginia was woefully behind other states. Requested input on how to move forward with changing regulations to address the ever changing face of EMS and broaden the definition of EMS. Gary offered that the legislative route with consistent language would be the route to pursue for future changes.	
B	Non-emergency transports of patient from hospital to home – Allen Yee, MD	Dr Yee opened discussion concerning the need for ALS intervention on non-emergency transports of patients from a hospital to home that are on PCA pumps, insulin pumps or medications that based on the Scope of Practice require ALS providers. He has been approached by the non-emergency partners requesting clarification of the need to have ALS intervention on home discharges. Committee feels the needs to review their previous approval of the revised Scope of Practice concerning level of care needed to transport patients to the home environment versus inter-facility transports. Workgroup established to consist of Scott Weir, MD, Allen Yee, MD, George Lindbeck, MD and a representative to be named by the Virginia Ambulance Association who will serve as the voice for the non-emergency transport agencies throughout Virginia.	**Motion: Scott Weir, MD** **To: Review previous approval of the Scope of Practice and Formulary and level of care required.** **Second: Allen Yee, MD** **Unanimously approved** **Motion: Scott Weir, MD** **To: Establish a workgroup to review and offer recommendations on level of care needed for transport to home versus inter-facility transport.** **Second: Allen Yee, MD** **Unanimously approved.**

Topic/Subject		Discussion	Recommendations, Action/Follow-up; Responsible Person
8. Research Notes		No Items presented.	
9. State OMD – George Lindbeck, MD (given by Marilyn McLeod)			
A	Tranexamic Acid White Paper	Discussion by committee concerning the use of TXA. Information shared concerning the use. Committee feels further information should be included in the white paper. **Attachment 'C'**	**Dr. Mcleod to share discussion with Dr. Lindbeck and work with him for revision of white paper.** **See Attachment 'C'**
B	Evidence based guideline for pre-hospital hemorrhage control	Committee input concerning management of pre-hospital hemorrhage control. Distributed for informational purposes only. Discussion concerning the need for the development of a white paper. Dr. Yee mentioned that a white paper exists but the use of hemostatic agents was not emphasized. **Attachment 'D'**	**See Attachment 'D'**
C	Resources and discussion on drug shortages – presentations from NASEMSO Mid-year meeting	Reviewed the paper with links to information on drug shortages from the NASEMSO mid-year meeting. Dr. Mcleod opened discussion on the decision to advise EMS providers not to administer Epinephrine that has expired. Dr. Yee stated that Board of Pharmacy states that an out of date drug is considered an adulterated drug and cannot be administered. **Attachment 'E'**	**Michael Berg has forwarded the question to the Board of Pharmacy and the Office of EMS on the direction to administer an expired drug.** **See Attachment 'E'**
D	Question of fixed dose syringes for BLS providers to administer epinephrine	Reviewed the handout concerning the use of pre-measured 0.3 cc syringes of Epinephrine in lieu of the use of the Epi-pen. **Attachment 'F'**	**See Attachment 'F'**
E	Hartford Consensus II paper on mass shooting events	Reviewed the handout for the Hartford Consensus II paper on mass shooting events. Dr. Weir encouraged the group to review the implementation of policy based on your needs. Dr. Reed Smith stated the paper is heavily swayed by military input. Committee feels this is a good starting point for the development of policy for your agency. **Attachment 'G'**	**See Attachment 'G'**
F	Resources on Blast Injury Management from the CDC	Provided the link to this informational sheet: http://www.bt.cdc.gov/masscasualties/blastinjuryfacts.asp **Attachment 'H'**	**See Attachment 'H'**
Office of EMS Reports			
A	BLS Training Specialist –	1. EC Institute	

	Topic/Subject	Discussion	Recommendations, Action/Follow-up; Responsible Person
	Greg Neiman	a. 10 Fire Instructors attend a two day Instructor Institute at the office in January to become certified as an Education Coordinator. b. 10 candidates attended the Instructor Institute held at the VAVRS office in Oilville from March 29-April 2. c. June institute could potentially be cancelled due to lack of candidates. 2. Updates a. The DED Division will stay on the road for 2014. b. Next update is scheduled for April 19, 2014 in the TJEMS region. c. See the latest schedule on our Webpage: http://www.vdh.virginia.gov/OEMS/Training/EMS_InstructorSchedule.htm 3. TCC Workgroups a. Reported that online education workgroup is working to review the ability for online education and hybrid educational offerings to be conducted in Virginia.	
B	ALS Training Specialist – Debbie Akers	1. Reported that the final 2 pending ALS-Coordinators candidates attended the Instructor Institute and are now endorsed. 2. Reported on the new rulings by CoAEMSP concerning distance education and hybrid EMS certification courses. 3. Reported that the National Registry transition testing process for NR I-99's who have attended a state approved I-P bridge course is going well. Program Directors have been given the option to not allow their students to pursue this path and have been notified that one program has made this decision. 4. BLS NR Statistics '**Attachment 'I'** a. Distributed latest results as of April 8, 2014. b. Shared additional information concerning number of students who have now exceeded the one year deadline following the completion of their course for completing their psychomotor test. 468 candidates have exceed that one year window; 25.6% have never attempted the exam, 45.1% have made their first attempt that was paid by the Office of EMS, the balance of 29.3% have made two or more unsuccessful attempts without gaining certification.	**See Attachment 'I'**
C	Funding and Accreditation – Debbie Akers	1. EMSTF **Attachment 'J'** a. Report distributed. b. Funding is still available for this fiscal year. c. EMSTF contracts are being reviewed and will be made available for distribution in May. 2. Accreditation **Attachment 'K'** a. Two paramedic programs (Lord Fairfax CC and Patrick Henry CC have had their CoAEMSP accreditation visits and are awaiting their CoAEMSP response to the visit.	**See Attachment 'J'** **See Attachment 'K'**

	Topic/Subject	Discussion	Recommendations, Action/Follow-up; Responsible Person
		b. Two paramedic programs (Rappahannock CC and Prince William have complete their first cohort class and are now required to submit their Initial-Accreditation Self Study Report (ISSR) to CoAEMSP who will then schedule their accreditation site visit. c. 1 new Paramedic Program still on the horizon d. Initial self study has been received for an Intermediate program at Southwest VA EMS Council. e. BLS i. Two programs are slated for their one-year follow up. ii. The first Advanced EMT accreditation packet will be delivered to the office next week.	
D	Division of Educational Development – Warren Short	1. Reported that the new recertification process went into place on March 1st. It is running smoothly and has been received favorably by the community. 2. Reported that Virginia continues to certify I99s. National Registry to support the examination through 2018. Will start process toward the end of 2014 to write a certification examination for the I99 level. 3. Reported that Symposium 2014 looks good, largest amount of classes we've ever had. A lot of the presenters will be from out of state. Encouraged the participation of Virginia physicians and educators to submit proposals for 2015. 4. Reported that the OMD portal has been rolled out. Some emails went out without containing passwords. Provided the formatting of the default password. Mr. Short gave a brief demonstration of the OMD portal to attendees.	
E	Regulation and Compliance – Michael Berg	1. Reported that the OMD updates are continuing to be conducted. However they are poorly attended in each. Updates will be held as follows: April 16 – Radford area 1-5 pm, April 25 – Bristol area 1-5 pm and the last update to be held prior to the November 2014 EMS Symposium will be at Rescue College in Blacksburg on June 6th. This will be a full day class. 2. Mr. Berg reported that he has received a response from BoP to an email he sent earlier today in reference to administrative codes 54.1.341 and 54.1.3462 related to the committee's earlier discussion about the administration of expired drugs. 3. Reported that the regulatory action related to Practitioner Signature lies in the Secretary of Health and Human Services office for review prior to moving to the Governor's office for review and signature. Upon receipt in the Governor's office there is no required timeline for signature, however, once signed it will require a 30 day comment period with the state registrar at which point it would go into effect. 4. Reported the issues concerning drug diversions. OEMS continues to receive multiple reports of drug boxes being tampered with and drugs being diverted. Recent reports in the media have come from the Virginia Beach area but is not exclusive to this area of the state. 5. Reported that Regulation 12VAC 5-31-910 had excluded the word affiliation in the current regulations. A change has been submitted that will allow the word affiliation to be added back to this regulation.	

Topic/Subject		Discussion	Recommendations, Action/Follow-up; Responsible Person
		6. Reported that he had received the last of the software and hardware needed last week to move forward with the fingerprint background checks. In the final stages of establishing the process and notifying the Regional EMS Councils to start distributing cards for finger printed based criminal background checks. 7. Debbie Akers reported that the TCC committee expressed interest in the Office of EMS exploring the need to offer this service to EMS education programs to meet the requirements for students to participate in clinical opportunities while enrolled in an initial EMS education program.	
F	Executive Director – Gary Brown	1. Dr. McLeod asked Gary Brown to address HB1010. Gary stated that the work addressing the concerns of HB1010 needs to continue. The issue is multi-faceted and encompasses more than just the educational issues and needs to be addressed. He has tasked Scott Winston to evaluate and determine the needs of recruitment and retention of volunteers. Scott Winston stated that there is historical data that this has been an ongoing problem. Will need to be addressed with data that shows the concerns expressed in HB1010 are not solely related to training requirements and other factors are involved. Gary Brown encouraged the committee to continue efforts to assist in addressing the issues surrounding HB1010. 2. Gary Brown reported that the legislative process has rendered no budget at present. It appears to not impact the OEMS budget but would impact any budget amendments. Mr. Brown used as an example the budget amendment for the Poison Control Centers and he stated it is not certain how the Poison Control Centers will be impacted. 3. Reported that he has been requested by the Governor's office to contact the representative groups who have an EMS Advisory Board seat scheduled to expire. He has asked these groups to provide him with a courtesy copy of the nominee list. It does appear that there will be appointments forthcoming in the very near future. 4. Reported that the next state EMS Advisory Board meeting is scheduled for May 8 and 9 at the Courtyard Marriott. Encouraged anyone interested to attend.	
PUBLIC COMMENT		1. John Dugan stated that the annual meeting for VHAC will be held on Friday, May 2nd at Mary Washington Hospital Fick Conference Center. Dinner meeting will be held on May 1st. The results of the 12 lead survey conducted by OEMS will be reviewed at that time. Information will be shared on new studies on hypothermia treatment of cardiac arrest patients. 2. Dr. McLeod asked John Dugan about the EMS recognition awards. John stated that the awards will be released in the near future.	
For The Good Of The Order			
Meeting Dates for 2014		July 10, 2014, October 9, 2014	
Adjournment		12:58 P.M.	

Attachment A

MEDICAL DIRECTION COMMITTEE MEETING ROSTER
April 10, 2014

Please sign in next to your name.

Region	Representative	Signature
SWVEMS	PAUL PHILLIPS, D.O.	
WVEMS	CHARLES LANE, M.D.	excused
BREMS(CHAIR)	MARILYN MCLEOD, M. D.	
TJEMS (OEMS)	GEORGE LINDBECK, M. D.	excused
CSEMS	ASHER BRAND, M. D.	
LFEMS	CHRISTOPHER TURNBULL, M.D.	excused
REMS	NAEL HASAN, M. D.	
NVEMS	E. REED SMITH, M.D.	
ODEMSA	ALLEN YEE, M. D.	
PEMS	CHERYL LAWSON, M. D.	
TEMS	STEWART MARTIN, M. D.	
MAL	FORREST CALLAND, M.D.	
MAL	SCOTT WEIR, M.D.	
EMS CHILDREN	THERESA GUINS, M.D.	
VAGEMSA	CHIEF EDDIE FERGUSON	

OEMS STAFF:

GARY BROWN		WARREN SHORT	
SCOTT WINSTON		DEBBIE AKERS	
MIKE BERG		GREG NEIMAN	
TIM PERKINS			

MEDICAL DIRECTION COMMITTEE MEETING ROSTER
April 10, 2014

OTHERS PRESENT: PLEASE PRINT YOUR NAME AND SIGN ON THE LINE NEXT TO YOUR NAME.

PRINT NAME	SIGNATURE
Adam Alford	
CHAD BLOSSER	
Randy Veldreich	
TOM EZELL	
Cathy Cockrell	
Cheryl Lamm	
JOHN DUGAN	

Attachment B

ZOLL LifeVest

Questions & Answers

1. What is a LifeVest?
The LifeVest wearable defibrillator is worn by patients at risk for sudden cardiac arrest (SCA), providing protection during their changing condition and while permanent SCA risk has not been established.

2. What does the "Respond" message mean?
Before delivering a treatment shock, the LifeVest tests to see if a patient is conscious by providing the patient an opportunity to press and hold the response buttons to prevent a treatment shock. It is important that only the patient press and hold the response buttons.

3. What if the patient has Blue™ gel on their skin?
The LifeVest therapy pads release a Blue™ gel prior to a treatment shock to both improve shock conduction and mitigate burning. The gel should remain on the patient as long as the patient is wearing the LifeVest in case additional treatment shocks are required. If you choose to remove the LifeVest from the patient and monitor the patient with external equipment, the gel can be removed with water.

Questions & Answers continued on back

4. How long does it take for the LifeVest to treat a ventricular arrhythmia?
After the LifeVest detects a treatable arrhythmia, the time to treatment will be between 25 and 60 seconds depending on the type and rate of the arrhythmia and whether the patient presses the response buttons.

5. Can emergency personnel get shocked by the LifeVest?
Yes. No one should touch the patient while a shock is delivered. The LifeVest will warn bystanders with both a siren alert and a voice command stating "electrical shock possible, do not touch patient," or "bystanders do not interfere" before a shock is delivered.

6. Can emergency personnel use external defibrillation while the patient is wearing a LifeVest?
The monitor should be disconnected from the electrode belt prior to delivering an external defibrillation shock. The garment and belt do not need to be removed.

7. What if the patient describes or feels a vibration coming from the garment?
The vibrations, along with the alerts and voice prompts, are part of the LifeVest consciousness test, which requires the patient to press and hold the response buttons to avoid a shock. It is important that only the patient press and hold the response buttons.

8. What LifeVest items should the patient bring with them to the hospital?
If possible, the patient should bring the LifeVest, modem, charger, and extra battery to the hospital. This will allow the patient to download any stored event data from the monitor and charge the battery as required.

24-hour technical support, please call: 800.543.3267

ZOLL • Pittsburgh, PA 15238
p 800.543.3267 • f 866.567.7615 • www.zoll.com

20C0062 Rev E

ZOLL LifeVest

LIFEVEST® WEARABLE DEFIBRILLATOR EMERGENCY PATIENT MANAGEMENT

LIFEVEST® WEARABLE DEFIBRILLATOR EMERGENCY PATIENT MANAGEMENT

What **alert** sounds and **voice** prompts are being broadcast?

ALERT:
- Device Silent OR Gong Alert (SINGLE TONE)

VOICE:
- None — device silent
- "Contact physician"
- "Treatment has been given, call your doctor"

STATUS:
- Device is monitoring the patient
- Device may be alerting the patient to follow instructions on the screen

Proceed to First Responder Instructions Below

ALERT:
- Siren Alert (TWO TONE)

VOICE:
- "If patient is not responsive, call for help, perform CPR"
- "Device disabled, call ambulance"

STATUS:
- Device cannot detect ECG or the device has delivered the maximum number of treatments

Proceed to First Responder Instructions Below

ALERT:
- Siren Alert (TWO TONE)

VOICE:
- "Press response buttons to delay treatment"
- "Electrical shock possible, DO NOT TOUCH PATIENT"
- "Bystanders do not interfere"

STATUS:
- Device has detected a ventricular arrhythmia
- Device is preparing to treat the patient
- Shock likely
- Stop CPR
- Only the patient should press the response buttons (patient consciousness test)
- Do not touch patient
- Allow device to treat the patient

When siren alert stops or "If patient is not responsive, call for help, perform CPR" is broadcast.

Proceed to First Responder Instructions Below

First Responder Instructions

- Proceed with standard evaluation and treatment measures.
- CPR can be performed as long as the device is not broadcasting **"press the response buttons," "electrical shock possible, do not touch patient,"** or **"bystanders do not interfere."**
- If external defibrillation is available, a decision can be made to remove the LifeVest and monitor/treat the patient with the external equipment.
- To remove the LifeVest, first pull out the battery, then remove the garment from the patient.

24-hour technical support, please call: 800.543.3267

Attachment C

Tranexamic Acid (TXA) use in Pre-Hospital Care

Tranexamic acid (TXA) is a relatively simple and inexpensive medication that has anti-fibrinolytic activity that can reduce bleeding after surgery or injury. Although TXA has been in use for many years it has relatively recently been considered for use in the pre-hospital management of trauma patients.

The recent interest in use of TXA by EMS providers has largely been driven by the results of the CRASH-2 study, a very large, prospective, randomized, multi-center study of TXA use in trauma patients. Patients were randomized to receive a bolus of 1 gram of TXA over 10 minutes followed by an infusion of 1 gram over the next 8 hours, or placebo. That study showed a significant decrease in the all cause mortality rate as well as death due to hemorrhage in the patient group that received TXA.

The strengths of the study included its very large size and statistically significant results. Potential challenges in applying the study results to pre-hospital practice included inclusion criteria that included subjective assessments of the treating physicians: “Adult trauma patients with “significant haemorrhage (systolic blood pressure <90 mmHg or heart rate >110 beats per min. or both), or who were considered to be at risk of significant haemorrhage …” and limitation of the study to adult patients.

The study included patients within an 8 hour widow from the time of injury, although subsequent subgroup analysis indicated the greatest benefit within 1 and 3 hours of injury and evidence that treatment delayed for greater than 3 hours increased the risk of death from bleeding.

Agencies that are considering incorporating the use of TXA in their patient care guidelines should develop indications for the use of TXA that are as clear and objective as possible to assist providers in identifying patients who might benefit from TXA administration. In addition, agencies contemplating the use of TXA should coordinate with the trauma centers that might receive those patients to coordinate the use of TXA with their patient care protocols, in part as the bolus dose of medication needs to be followed with an infusion of TXA over the subsequent 8 hours.

References:

Effects of tranexamic acid on death, vascular occlusive events, and blood transfusion in trauma patients with significant haemorrhage (CRASH-2): a randomised, placebo-controlled trial. Lancet. 2010 Jul 3;376(9734):23-32. doi: 10.1016/S0140-6736(10)60835-5. Epub 2010 Jun 14.

The CRASH-2 Collaborators. The importance of early treatment with tranexamic acid in bleeding trauma patients: an exploratory analysis of the CRASH-2 randomised controlled trial. *Lancet* 2011; Published Online March 24, 2011DOI:10.1016/S0140-6736(11)60278-X

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Perel P[1], Prieto-Merino D, et al Development and validation of a prognostic model to predict death in patients with traumatic bleeding, and evaluation of the effect of tranexamic acid on mortality according to baseline risk: a secondary analysis of a randomised controlled trial. Health Technol Assess. 2013 Jun;17(24):1-45, v-vi.

Attachment D

SPECIAL CONTRIBUTION

AN EVIDENCE-BASED PREHOSPITAL GUIDELINE FOR EXTERNAL HEMORRHAGE CONTROL: AMERICAN COLLEGE OF SURGEONS COMMITTEE ON TRAUMA

Eileen M. Bulger, MD, FACS, David Snyder, PhD, Karen Schoelles, MD, FACP, Cathy Gotschall, ScD, Drew Dawson, BA, Eddy Lang, MD, CM CCFP (EM) CSPQ, Nels D. Sanddal, PhD, NREMT, Frank K. Butler, MD, FAAO, FUHM, Mary Fallat, MD, FACS, Peter Taillac, MD, Lynn White, MS, CCRP, Jeffrey P. Salomone, MD, FACS, NREMT-P, William Seifarth, MS, NREMT-P, Michael J. Betzner, MD, FRCPC, Jay Johannigman, MD, FACS, Norman McSwain, Jr., MD, FACS, NREMT-P

Received January 21, 2014 from the University of Washington, Seattle, Washington (EB), ECRI Institute of Health Technology Assessment, Washington DC (DS, KS), Office of Emergency Medical Services National Highway Traffic Safety Administration, Washington DC (CG, DD), University of Calgary, Alberta, Canada (EL, MJB), American College of Surgeons, Chicago, IL (NDS), Committee on Tactical Combat Casualty Care, Joint Trauma System (FKB), University of Louisville, Louisville, Kentucky (MF), University of Utah, Salt Lake City, Utah (PT), American Medical Response, Inc. (LW), Maricopa Medical Center, Phoenix, Arizona (JPS), Department of Homeland Security, Office of Health Affairs (WS), University of Cincinnati, Cincinnati, Ohio (JJ), and Tulane School of Medicine, New Orleans, Louisiana (NM). Revision received February 12, 2014; accepted for publication February 13, 2014.

The systematic review of the evidence used for the development of these guidelines was conducted by ECRI Institute with funding provided by the National Highway Traffic Safety Administration, DTNH22-11-C-00223.

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The opinions or assertions contained herein are the private views of the authors and are not to be construed as official or as reflecting the views of the Department of the Army or the Department of Defense.

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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ABSTRACT

This report describes the development of an evidence-based guideline for external hemorrhage control in the prehospital setting. This project included a systematic review of the literature regarding the use of tourniquets and hemostatic agents for management of life-threatening extremity and junctional hemorrhage. Using the GRADE methodology to define the key clinical questions, an expert panel then reviewed the results of the literature review, established the quality of the evidence and made recommendations for EMS care. A clinical care guideline is proposed for adoption by EMS systems.
Key words: tourniquet; hemostatic agents; external hemorrhage

PREHOSPITAL EMERGENCY CARE 2014;18:163–173

INTRODUCTION

External hemorrhage has been increasingly recognized as a major cause of potentially preventable death following severe injury. This issue has been thoroughly addressed by the U.S. military Tactical Combat Casualty Care Committee (TCCC) in response to the increase in life-threatening external hemorrhage seen in the conflicts in Iraq and Afghanistan (www.health.mil/Education_And_Training/TCCC.aspx). Implementation of the TCCC guidelines for tourniquet use has been associated with a significant reduction in the number of combat deaths attributed to extremity hemorrhage.[1] Lessons learned from the military management of these injuries are beginning to be adopted in the civilian community and the recent Boston marathon bombing event highlighted this issue.[2] A report from the National Trauma databank suggests that mortality for patients with isolated lower extremity trauma with an arterial injury is 2.8%, with a 6.5% amputation rate.[3]

The use of tourniquets and hemostatic agents in the civilian EMS community is not widespread.[4,5] While there is increasing interest in the use of these agents by civilian EMS agencies, the differences between the civilian and military populations may be important. These considerations, not well addressed in the published military experience, include the use of these modalities in elderly and pediatric patients and the impact of medical comorbidities on outcome. Even as recently as 2011, the Guidelines for Field Triage of Injured Patients does not include a recommendation for tourniquet use as a trauma triage criteria because "evidence is limited regarding the use of tourniquets in civilian populations; use of tourniquets among EMS systems varies; inclusion of tourniquet use as a criterion could lead to overuse of tourniquets instead of basic hemorrhage control methods, and thus potentially result in overtriage."[6] However, the National EMS Scope of Practice Model published in 2007 lists tourniquet use as part of the minimum psychomotor skill set for emergency trauma care for emergency medical technicians. In addition, tourniquets have been included as required basic life support (BLS) equipment in the Joint Policy Statement: Equipment for Ambulances.[7] Topical hemostatic agents are listed as optional basic equipment. The recent Hartford consensus conference also encourages wider civilian use of tourniquets for management of hemorrhage in active shooter events.[8]

The purpose of this project was to develop evidence-based guidelines for the use of tourniquets and hemostatic dressings in the U.S. civilian prehospital setting. The recommendations were based on a systematic review of the current literature and were developed using the GRADE methodology.[9] External hemorrhage is defined as blood loss originating from a ruptured blood vessel and appearing on the body surface. For the purposes of our review, this includes extremity hemorrhage and junctional hemorrhage. Junctional hemorrhage includes the groin proximal to the inguinal ligament, the buttocks, the gluteal and pelvic areas, the perineum, the axilla and shoulder girdle, and the base of the neck.[10]

APPROACH

Expert Panel

An expert panel was convened by the American College of Surgeons Committee on Trauma EMS Committee to include nationally recognized experts in prehospital trauma care. Representatives were included from the military's Tactical Casualty Combat Care Committee, Prehospital Trauma Life Support, civilian State EMS directors, trauma surgeons, emergency physicians, a pediatric surgeon, an EMS researcher, a GRADE methodologist, and a paramedic. Representatives were from both the United States and Canada. Panelists provided input to the formulations of the PICOTS (populations, interventions, comparators, outcomes, timing, and settings) questions prior to the initiation of the literature review. For the PICOTS questions, the population of interest was defined to be individuals with extremity hemorrhages; the interventions were commercially available tourniquets and hemostatic dressings; comparators were external wound pressure and nontourniquet or nonhemostatic interventions; outcomes of interest were limb salvage, hypovolemic shock, survival, and adverse effects. Because timing and setting were considered to be key aspects of the investigation the PICO format was expanded to include both immediate and long-term outcomes and the setting for the intervention was defined as the prehospital environment, before any procedures are performed in the hospital emergency department or operating theater. Following the completion of the systematic literature review, the panel met to review the literature in a full day meeting in Washington DC, October 2013. An expert in the application of the GRADE methodology facilitated the meeting and the panel used this approach to develop recommendations for each PICOTS question.

Evidence Review

A systematic review of the literature was conducted by the ECRI Institute, one of the eleven Evidenced-Based Practice Centers designated by the U.S. Agency for Healthcare Research and Quality. Their systematic literature review and evidence tables were used by the expert panel to develop these recommendations. A summary of the findings is included in this manuscript; the full ECRI report will be simultaneously published by the National Highway Traffic Safety Administration (NHTSA) and will be available at www.ems.gov. The PICOTS questions used to guide the literature review were developed with input from the multidisciplinary expert panel.

Literature search included 13 external and internal electronic databases, including CINAHL, EMBASE, and Medline, from 2001 to the present for fully published, primary, clinical studies. The Cochrane Database of Systematic Reviews (Cochrane Reviews), Database of Abstracts of Reviews of Effects (DARE), and Health Technology Assessment and Database (HTA) were also searched for secondary reviews. Additional search steps included manual search of bibliographies listed in fully published studies; search and written inquiry to regulatory agencies, including the U.S. Food and Drug Administration; and search of www.ClinicalTrials.gov and www.controlled-trials.com for ongoing clinical trials. Publications were also suggested for inclusion by expert panel members who commented on the draft report.

The criteria for inclusion in the systematic review were studies published in English that reported on traumatic hemorrhage treated by EMS personnel in the prehospital setting with tourniquets or hemostatic dressings currently available in U.S. commercial markets. In addition, the studies reported findings on at least one of the outcomes identified in the PICOTS questions and included at least 5 patients per treatment group; results for extremity and junctional hemorrhage were considered separately. To avoid duplication, when several sequential reports from the same study center were available, only findings from the largest, most recent, or most complete report was used. Because of the paucity of published studies on hemostatic dressings, for these questions the inclusion criteria were expanded to include animal studies of FDA-cleared or approved hemostatic dressings using either a swine or goat model of extremity bleeding. Risk of bias and other indicators of strength of evidence were assessed and reported.

The absolute risk differences and relative risk (RR) with 95% confidence intervals for the primarily dichotomous outcomes were calculated for individual studies. In cases in which meta-analyses was possible a summary odds ratio (OR) was calculated using a random effects model. Studies were combined using meta-analysis when populations and interventions were similar. Given the nature of the populations examined in this report, military populations were separated from civilian populations and data from children (younger than 18 years of age) was also examined independently. Statistical heterogeneity was examined using I^2, but the small number of studies in the comparisons limited our confidence in measures of heterogeneity.

PICOTS Questions

1) In trauma patients with extremity hemorrhage (excludes junctional hemorrhage) who are treated in the prehospital setting, what is the effect of tourniquet use (single or double) with or without external wound pressure on limb salvage, hypovolemic shock, survival, and adverse effects compared with external pressure alone or with other nontourniquet interventions?
2) In trauma patients with junctional hemorrhage who are treated in the prehospital setting, what is the effect of junctional hemorrhage control device use with or without external wound pressure on limb salvage, hypovolemic shock, survival, and adverse effects compared with external pressure alone.
3) In trauma patients with extremity hemorrhage (excludes junctional hemorrhage) who are treated in the prehospital setting, do different brands or models of tourniquets differ from each other in their effect on limb salvage, hypovolemic shock, survival, and adverse effects?
4) In trauma patients with junctional hemorrhage who are treated in the prehospital setting by EMS personnel, do different brands or models of specialized junctional hemorrhage control devices differ from each other in their effect on limb salvage, hypovolemic shock, survival, and adverse effects?
5) In trauma patients with external hemorrhage (excludes junctional hemorrhage) who are treated in the prehospital setting using a tourniquet –
   a) Does the incidence of adverse events vary by the duration of tourniquet use prior to removal?
   b) Does the incidence of adverse events vary depending on whether tourniquets are removed in the field versus in a facility?
6) In trauma patients with external hemorrhage (hemorrhage from any body surface) who are treated in the prehospital setting, what is the effect of hemostatic dressings with or without external wound pressure on, control of hemorrhage, limb salvage (if an extremity involved), hypovolemic shock, survival, and adverse effects compared with using non-hemostatic gauze with or without external wound pressure?
7) In trauma patients with external hemorrhage (hemorrhage from any body surface) who are treated in the prehospital setting, do different brands or types of hemostatic dressings differ from each other in their effect on, hemorrhage control, limb salvage (if an extremity is involved), hypovolemic shock, survival, and adverse effects?

GRADE Methodology

The panel used the Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology to guide the process of PICOTS question formulation, evidence appraisal, and to designate the strength of recommendations. The process also adhered to the National Prehospital Evidence-Based Guideline (EBG) Model Process approved by the Federal Interagency Council for EMS and the National EMS Advisory Council.[11,12] Panel members received an introduction to the GRADE methodology and reviewed the evidence for structured clinical questions using the PICO framework. After reading and discussing the systematic review of the evidence, the panel drafted graded recommendations. The recommendations were graded strong or weak, based on the balance between risk, benefit, burden, and cost, while the quality of evidence was appraised as high, moderate, low, or very low.[13–18] Although the initial assignment of a strength of evidence rating is based on

study design, GRADE allows the evidence appraisal to be upgraded or downgraded, depending on such factors as the size and consistency of the reported effect or the presence of a dose response.[19] Using the GRADE terminology, strong recommendations begin with the words "we recommend" and indicate that the panel believes that the benefits clearly outweigh any risks associated with the treatment and that nearly all informed patients would want the recommended treatment. Weak recommendations begin with the words "we suggest," which indicates that the panel had a higher level of uncertainty about estimated benefits of the treatment the balance between benefits and risks.

RESULTS

Summary of Evidence Review

Our searches identified 1,599 potential citations for evaluation and full review identified 23 clinical studies that met our inclusion criteria (Figure 1). While not the focus of this review we also reviewed 39 animal model studies, which compared efficacy of the topical hemostatic agents. Nine studies were identified that used only human volunteers and these were excluded.

Tourniquet Use

We identified 20 publications of prehospital tourniquet use for trauma-induced extremity hemorrhage. However, four publications did not provide information on outcomes needed for inclusion in this report: Lairet et al.,[20] Gerhardt et al.,[21] Kragh et al.,[22] Kragh et al.[23] In two instances, the same study population was assessed in two separate publications. Kragh et al.[24] and Kragh et al.[25] used the same set of 499 patients and Kragh et al.[26] and Kragh et al.[27] used the same set of 232 patients. The 16 included publications are listed in Table 1 along with the setting in which the data on tourniquet

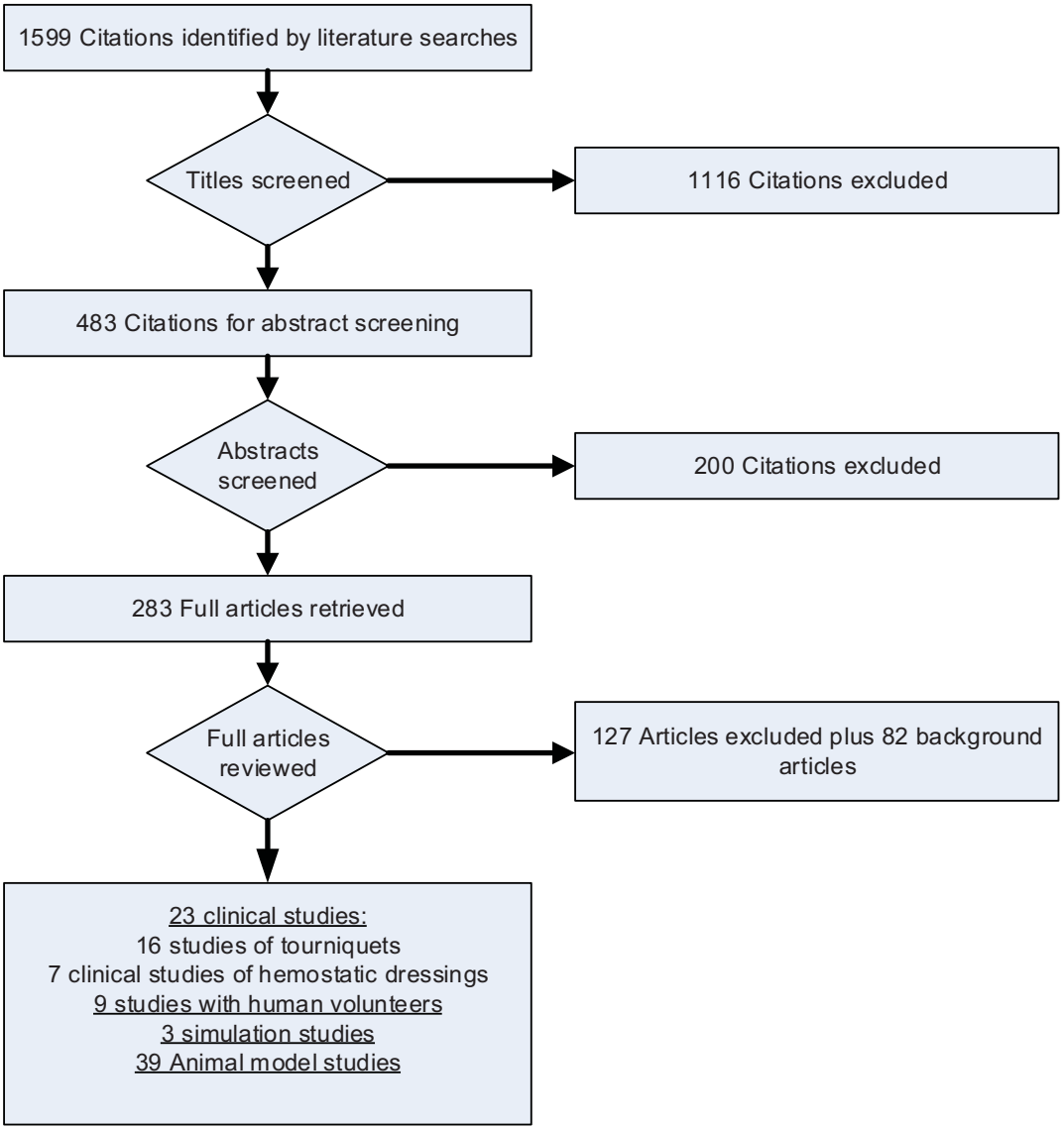

FIGURE 1. Summary of literature review.

TABLE 1. Studies of prehospital tourniquet use

Reference	Setting	Period of data collection	*N*	Patient characteristics	Outcomes reported
Eastridge et al., 2012[1]	U.S. military Iraq/Afghanistan	Oct 2001 to June 2011	976	Not reported	Deaths
King et al., 2012[40]	U.S. military Afghanistan	Aug 2011 to Nov 2011	54	Not reported	Deaths, adverse events
Kragh et al., 2012[28]	U.S. military Iraq/Afghanistan pediatric casualties	May 2003 to Dec 2009	88 (pediatric)	72 were male and 16 were female patients. Mean age was 11 years (median, 11 years; range, 4–17 years). Injuries: explosion 64%, gunshot 30%, other 6%.	Deaths
Kotwal et al., 2011[29]	U.S. military Iraq/Afghanistan	Oct 2001 to March 2010	460 (66 w/tourniquet)	All casualties were male, with age at time of injury ranging from 18.9 to 52.9 years. Injuries: explosion 67%, gunshot 24%, blunt trauma 6%.	Deaths, amputations
Kragh et al., 2011[25]	U.S. military Iraq	March 2006 to March 2007	499	96% male, average age 29 years, 16 were children and 5 elderly. Injury: explosion 75%.	Deaths, adverse events
Kragh et al., 2011[24] (same study as Kragh et al., 2011[25] but reporting morbidities)	U.S. military Iraq	March 2006 to March 2007	499	96% male, average age 29 years, 16 were children and 5 elderly. Injury: explosion 75%.	Adverse events
Brown et al., 2010[41]	U.K. military Iraq/Afghanistan	Aug 2003 to May 2008	23	Median age 26 years, range 18–42 years, not specific to tourniquet patients. Injuries for entire patient pool: explosion 62%, gunshot 38%.	Adverse events
Brodie et al., 2009[42]	U.K. military Iraq/Afghanistan	Feb 2003 to Sept 2007	70	Gender and age data not reported. Injuries: explosion 86%, gunshot 14%.	Deaths, amputations, adverse events
Clasper et al., 2009[31]	U.K. military Iraq/Afghanistan	Dec 2003 to May 20008	44 (22 w/tourniquet)	Tourniquet group: mean age of 26.6 years, range 19–37 years. Injuries: explosion 32%. Nontourniquet group: mean age of 25.7 years, range 19–37 years. Injuries: explosion 64%.	Amputations, adverse events
Kragh et al., 2009[26] (reassessment of data from Kragh et al., 2008[27])	U.S. military Iraq	March to Oct 2006	232 (194 w/tourniquet)	95% male, mean age of 29 years, range 4–70 years, 9 children and 1 elderly. Injuries: explosion 63%, gunshot 23%.	Deaths, amputations, adverse events
Tien et al., 2009[43]	Canadian military Afghanistan	Feb 2006 to May 2006	134??	Entire study examined 134 patients, 96% male, mean age of 26 years. Injuries: explosion 34%, gunshot 32%, blunt 22%.	Deaths
Beekley et al., 2008[30]	U.S. military Iraq	Jan 2004 to Dec 2004	165 (67 w/ tourniquet)	Tourniquet group: 97% male, mean age of 29 years. Injuries: explosion 64%, gunshot 30%. Nontourniquet group: 96% male, mean age of 25. Injuries: explosion 70%, gunshot 27%.	Deaths, amputations, adverse events
Dayan et al., 2008[32]	Israeli military	2006	5 (prolonged tourniquet use)	All males, 20–22 years old. Injuries: explosion = 1, gunshot. = 4.	Deaths, amputations, adverse events
Kalish et al., 2008[44]	U.S. civilian	Jan 1999 to April 2006	11	All males, mean age of 27 years, gunshot wounds 55%, stab wounds 27%, lacerations 18%.	Deaths and adverse events
Kragh et al., 2008[27]	U.S. military Iraq	March 2006 to Oct 2006	232 (194 w/tourniquet)	95% male, mean age of 29 years, range 4–70 years, 9 children and 1 elderly. Injuries: explosion 63%, gunshot 23%.	Deaths, amputations, adverse events
Lakstein et al., 2003[33]	Israeli military	Jan 1997 to Jan 2001	91 (improvised tourniquets)	Gender and mean age not reported. Injuries: explosion 73%, gunshot 27%.	Deaths, amputations, adverse events

use were collected and the outcomes reported by each study. The large majority of studies were conducted by the U.S. military in Iraq and Afghanistan (8 studies) with 3 studies from the U.K. military, 2 from the Israeli military, and 1 from Canadian military. Only 1 study was conducted in a civilian setting. One study used data on pediatric casualties described in the Joint Theater Trauma Registry and collected during the wars in Iraq and Afghanistan.[28] Thirteen of the 16 included studies reported data on deaths, 11 reported data on adverse events, 8 reported data on amputations, and none reported data on shock.

Eight of the studies used prospective data collection. Most of the studies provided some information on how the tourniquets were to be used, but only a few were specific about the instructions. However, the studies from the U.S. military were using TCCC practices when data were collected after 2005 and tourniquets were likely used aggressively as a first option for traumatic extremity hemorrhage.

Comparisons between casualties treated with a tourniquet and similar casualties not treated with a tourniquet were attempted by only a few studies. Kotwal et al.[29] reported the number of casualties treated with compression dressings but did not report outcomes for this group. Beekley et al.[30] reported outcome data for tourniquet- and nontourniquet-treated casualties but did not report what prehospital treatments the nontourniquet group received. Clasper et al.[31] matched surviving tourniquet-treated casualties with surviving nontourniquet-treated casualties to examine the rate of adverse events. These authors note, however, that "in a standard retrospective study it is likely that there would be considerable bias if simple comparison was made between the two groups as it is likely that those casualties with more severe injuries would have required a tourniquet, but those with a more severe injury are also likely to have worse outcomes and experience more complications."[31]

Meta-analysis of the 9 studies reporting survival for adult military casualties treated with tourniquets demonstrated a summary effect size estimate for survival rate of 92% with 95% confidence intervals of 88–95%. Findings in the study of children were similar (92%, with CI 84–96%). The study of a civilian population was small (11 cases), so the confidence interval was wide, but the survival rate similar (91%, CI 56–99%). A similar analysis for 6 studies reporting amputation rates demonstrated a summary effect size estimate of 19% with a 95% confidence interval from 16–23%. These amputations are presumably primarily associated with the severity of the extremity injury, as they are not described as complications of tourniquet use. The overall quality of the evidence for PICOTS Question 1 was rated using the GRADE system as Moderate for survival based on upgrading due to the large effect size and Very Low for amputation rate (Table 2).

There were no studies available that directly addressed PICOTS questions 2, 3, and 4. These included the efficacy of junctional hemorrhage control devices or the comparison of different brand or models of tourniquets. Regarding PICOTS question 5, there were 4 studies that correlated duration of tourniquet use with adverse events but specifics were not provided on the timing and setting of tourniquet removal.[27,30,32,33] Thus, the grade of evidence for PICOTS question 5 was rated as Low.

Hemostatic Agents

Seven studies were reviewed that reported on the prehospital use of hemostatic dressings (Table 3). Five were conducted in a military setting. One was civilian and 1 included both military and civilian data. The products tested included HemCon (3 studies), Celox (1 study), QuickClot granules (2 studies), and QuickClot Gauze (1 study). One study did not report the type of hemostatic dressings used. Only 1 study reported mortality and 4 studies reported on adverse events. No studies provided a direct comparison between the use of hemostatic dressings and simply applying direct pressure to the wound. The primary adverse event noted was pain and discomfort associated with an exothermic reaction to QuickClot granules.

The primary outcome for 5 studies was cessation of bleeding. The study by Brown et al.[34] reported that HemCon controlled external hemorrhage in 27 of 34 cases (79%); in 25 cases the bleeding stopped within 3 minutes of application. The study by Cox et al.[35] is confounded because 7 of the 8 patients treated with hemostatic dressings in the field were also treated with a tourniquet. The study by Pozza and Millner[36] reported that Celox stopped bleeding in 18 gunshot wounds when first applied and in 3 additional cases with further application. The study by Ran et al.[37] reported that QuickClot gauze successfully stopped bleeding in 11 out of 14 cases of extremity and truncal hemorrhage. The study by Rhee et al.[38] reported that QuickClot granules were 100% effective in stopping bleeding. In the study by Wedmore et al.,[39] medics were surveyed on their use of HemCon dressing. In 42 of the 64 cases, the dressings were used when traditional gauze dressings or pressure dressings failed to stop bleeding. In 62 of the 64 cases, HemCon successfully stopped the bleeding. The risk of bias associated with these studies is high because they are all single-arm studies with no comparison group. Sufficient data were not available to provide an estimate of survival rates or amputation rates in patients treated with hemostatic dressings. The overall strength of evidence for Key Question 6 was graded as Low using the GRADE system.

TABLE 2. Key Question 1: Strength of evidence grades for survival rate and amputation rate with prehospital tourniquet use

					Decrease GRADE					Increase GRADE			
Outcome	# Studies (total N)	Type of studies	Findings	Starting GRADE	Study limitations	Consistency	Directness	Precision	Publication bias	Large magnitude of effect	Dose-response	Confounders	GRADE of evidence for outcome
Survival rate	9 studies of military personnel (1,229)	Observational	91.9% (95% confidence interval [CI]: 88.1% to 94.6%)	Low	−1 Absence of comparison group	0	0	0	0	+2 (7-fold improvement over historical military data)	0	0	Moderate
Amputation rate	6 (556)	Observational	19.2% (95% CI: 15.8% to 23.2%)	Low	−1 Absence of comparison group	0	0	0	0	0	0	0	Very Low

Table 3. Studies of prehospital hemostatic dressings

Reference	Setting	Period of data collection	Number of casualties treated	Patient characteristics
Brown et al., 2009[34]	U.S. civilian	June 2006 to Aug 2006	HemCon $n = 34$	53% extremity wounds, 68% male, mean age of 51.5 years, range of 16–91 years.
Cox et al., 2009[35]	U.S. military Iraq	April 2006 to Oct 2006	HemCon $n = 5$, QuikClot granules $n = 3$	7 of 8 extremity wounds, other data not reported.
Lairet et al., 2012[20]	U.S. military Afghanistan	Nov 2009 to Nov 2011	Not specified $n = 23$, Compression $n = 371$	For all 1,003 patients in the study, the mechanism of injury was explosion 60%, penetrating 24%, blunt 15%. 97% male, mean age of 25 years.
Pozza and Millner, 2010[36]	U.S. military Afghanistan	April 2008 to April 2008	Celox = 21	All gunshot wounds. All male between ages of 18 and 45 years.
Ran et al., 2010[37]	Israel military	2009	Quikclot Combat Gauze n = 14	Injuries: blast = 7, gunshot = 6, stab = 1. Other data not reported.
Rhee et al., 2008[38]	U.S. civilian and U.S. military Iraq	Not specified, but study was completed in 2006	QuikClot granules n = 103 (69 treated by U.S. military personnel, 20 treated by civilian trauma surgeons, 14 treated by civilian first responders)	Injuries for all patients: explosion 21%, gunshot 66%, blunt 8%, stab wound 5%.
Wedmore et al., 2006[39]	U.S. military Iraq/Afghanistan	2003 to 2004	HemCon n = 64	55% extremity wounds; bleeding was predominantly from a venous source in 33 cases, arterial source in 7 cases, and unknown in 24 cases.

In regard to PICOTS Question 7, there were no patient studies that directly compared the different hemostatic dressings. The U.S. military has developed a standardized swine model, which involves a femoral artery injury with a standard period of free bleeding. This literature was summarized and reviewed by the expert panel. For the details of this review please see the full ECRI Institute report. These data factored into the recommendation by the panel for the use of a gauze format product that could be packed into the wound. The panel also supported the use of this standardized model for comparison of different products.

RECOMMENDATIONS BY EXPERT PANEL

The recommendations of the panel for management of external hemorrhage are summarized in Figure 2.

Tourniquets

Recommendation 1: We recommend the use of tourniquets in the prehospital setting for the control of significant extremity hemorrhage if direct pressure is ineffective or impractical.

Strength of Recommendation: Strong
Quality of Evidence: Moderate. The overall quality of the evidence for survival benefits of tourniquet use was upgraded from Low to Moderate, based on the large effect size. The evidence for preventing amputation was very low, due to a smaller effect size and issues relating to confounding (see Table 2).
Remarks: The panel believes that tourniquets used to treat severe extremity hemorrhage have a clear survival benefit, demonstrated by a large and consistent effect size across several studies. The panel discussed that direct pressure may be ineffective in the setting of major arterial injury or impractical in circumstances with limited manpower, unsecure scene, or when complex extrication or extraction is required.

Recommendation 2: We suggest using commercially produced windlass, pneumatic, or ratcheting devices that have been demonstrated to occlude arterial flow.

Strength of Recommendation: Weak
Quality of Evidence: Low
Remarks: The panel discussed the military experience with varying types of tourniquets and felt that tourniquet selection should be based on proven effectiveness at arterial occlusion. Tourniquets that impede venous return without adequate arterial occlusion may only worsen hemorrhage and increase complications.

Recommendation 3: We suggest against the use of narrow, elastic, or bungee-type devices.

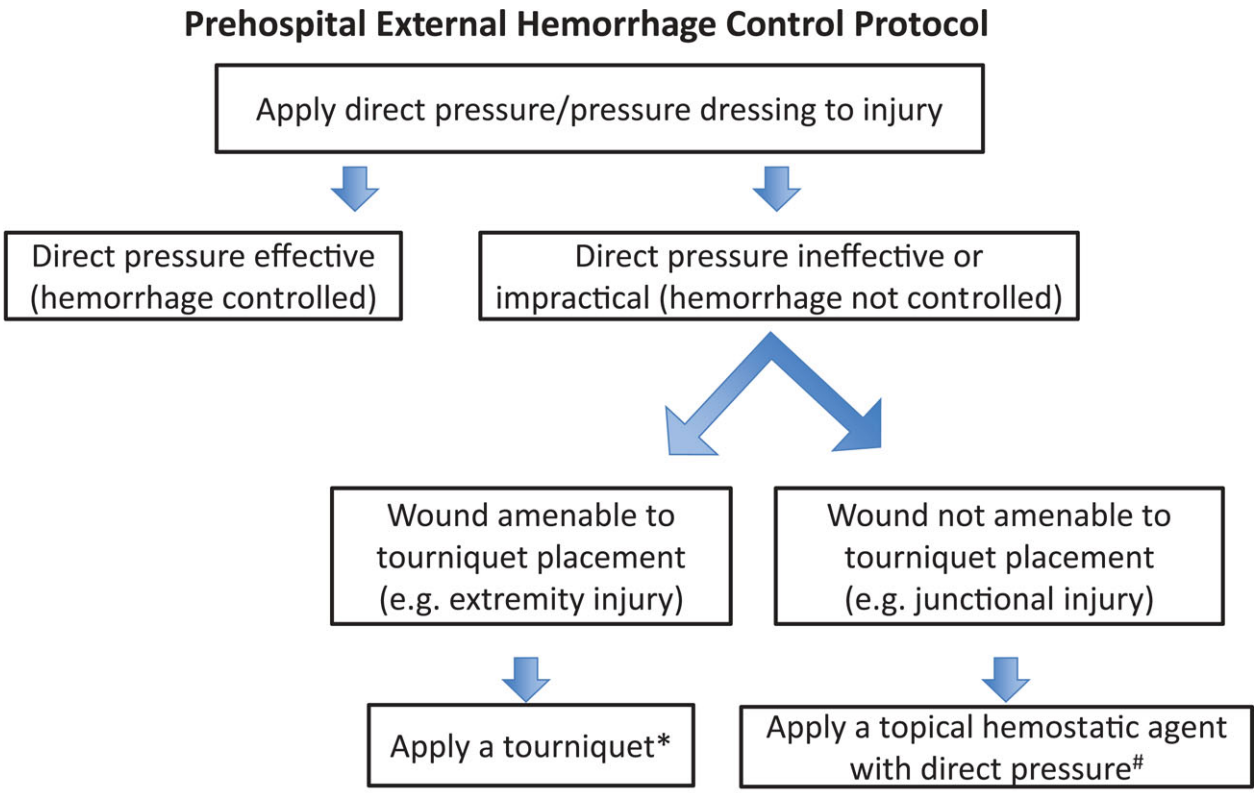

Figure 2. Protocol for prehospital external hemorrhage control.

Strength of Recommendation: Weak
Quality of Evidence: Low
Remarks: The panel discussed the military experience with varying types of tourniquets and felt that tourniquet selection should be based on proven effectiveness at arterial occlusion. Tourniquets that impede venous return without adequate arterial occlusion may only worsen hemorrhage and increase complications.

Recommendation 4: We suggest that improvised tourniquets be applied only if no commercial device is available.

Strength of Recommendation: Weak
Quality of Evidence: Low
Remarks: The panel discussed the military experience with varying types of tourniquets and felt that tourniquet selection should be based on proven effectiveness at arterial occlusion. Tourniquets that impeded venous return without adequate arterial occlusion may only worsen hemorrhage and increase complications. Commercially available tourniquets are favored over improvised tourniquets unless there is no other option.

Recommendation 5: We suggest against releasing a tourniquet that has been properly applied in the prehospital setting until the patient has reached definitive care.

Strength of Recommendation: Weak
Quality of Evidence: Low
Remarks: Given the relatively short transport times for most civilian EMS agencies, the committee felt the safest option was to leave a tourniquet that had been placed in the field in place until the patient can be assessed in the hospital. There may be exceptions to this approach for prolonged transport times or austere environments. In these circumstances, prehospital providers should consult direct (online) physician medical direction.

Junctional Hemorrhage Devices

Regarding the questions related to junctional hemorrhage devices, we believe this is an important area for

further study, but did not find sufficient evidence to make a recommendation at this time.

Topical Hemostatic Agents

Recommendation 1: We suggest the use of topical hemostatic agents, in combination with direct pressure, for the control of significant hemorrhage in the prehospital setting in anatomic areas where tourniquets cannot be applied and where sustained direct pressure alone is ineffective or impractical.

Strength of Recommendation: Weak
Quality of Evidence: Low
Remarks: While the evidence was low, there are consistent data from animal models, suggesting reduced hemorrhage with these agents compared to standard gauze and the committee felt that junctional hemorrhage and torso wounds may benefit from the combination of direct pressure and hemostatic dressings.

Recommendation 2: We suggest that topical hemostatic agents be delivered in a gauze format that supports wound packing.

Strength of Recommendation: Weak
Quality of Evidence: Low
Remarks: This recommendation was based on the military experience and the animal studies suggesting that products that allow packing of the wound have superior hemorrhage control.

Recommendation 3: Only products determined effective and safe in a standardized laboratory injury model should be used.

Strength of Recommendation: Weak
Quality of Evidence: Low
Remarks: The U.S. Army Institute for Surgical Research has developed a standardized large animal model for comparison of hemostatic dressings. The committee felt that all new products should be subject to this testing.

Additional Training Recommendations

- We advise that tourniquets and topical hemostatic agents be used under clinical practice guidelines and following product specific training.
- We advise that hemostatic agent training for prehospital personnel include proper wound packing and pressure application techniques.
- We advise that tourniquets and topical hemostatic agents use be expanded to include all prehospital personnel, including emergency medical responders (in concordance with the Hartford Consensus Statement[8]).

Need for Additional Research

While the military data were convincing that the use of tourniquets to control severe extremity hemorrhage is life saving, there remain several unanswered questions regarding the logistics of hemorrhage control in the civilian EMS community. The evidence available to assess many of the practical issues surrounding the use of tourniquets and hemostatic agents in the civilian community is very limited. There were insufficient data to make any recommendations regarding the newly developed devices for junctional hemorrhage control. There were insufficient data to make any specific recommendations regarding application in the extremes of age including pediatric and elderly patients. Future research should focus on these gaps in knowledge to further guide clinicians in the civilian application of these products.

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Attachment E

Drug Shortages Update

These are presentations from the Drug Shortage Summit at the NASEMSO mid-year meeting March 3-5

Drug Shortages: Causes, Progress, and Strategies, Erin R. Fox, PharmD, FASHP, Director, Drug Information Service, University of Utah Hospitals & Clinics, and Adjunct Associate Professor University of Utah College of Pharmacy.

http://www.nasemso.org/Meetings/MidYear/documents/Drug-Shortages-Overview-Erin-Fox-MY2014.pdf

Managing Emergency Drug Shortages in EMS, James Augustine, MD, EMS Medical Director in Atlanta, Dayton, and Naples, FL

http://www.nasemso.org/Meetings/MidYear/documents/Drug-Shortages-Managing-in-EMS-James-Augustine-MY2014.pdf

Navigation Between a Rock and a Hard Place, Carol A. Cunningham, MD, FAAEM, FACEP, Ohio EMS Medical Director, Ohio Dept. of Public Safety, Division of EMS, Columbus, OH.

http://www.nasemso.org/Meetings/MidYear/documents/Drug-Shortages-Carol-Cunningham-MY2014.pdf

EMS Drug Shortages: the States Respond, Peter Taillac, MD, Clinical Professor, University of Utah School of Medicine, and Medical Director, Utah Bureau of EMS and Preparedness.

http://www.nasemso.org/Meetings/MidYear/documents/EMS-Drug-Shortages-States-Respond-Peter-Taillac-MY2014.pdf

Florida Drug Shortage Task Force, Cory S. Richter, Chairman, Florida EMS Advisory Council (EMSAC), and Florida Drug Shortage Task Force.

http://www.nasemso.org/Meetings/MidYear/documents/Florida-Drug-Shortage-Task-Force-Cory-Richter-MY2014.pdf

Attachment F

Fixed Dose Epinephrine Administration

Maintaining epinephrine auto-injectors for EMS agencies, particularly BLS agencies, has become increasingly challenging because of the cost of the auto-injectors and the frequency with which they go out-of-date before use. Med-math, the calculation of medication dosages and measurement of medications, is not part of the BLS provider (EMT) scope of practice so BLS providers have not been allowed to draw up medications out of vials or ampoules of medication.

There is an evidence base that raises considerable concern about the accuracy of medication dosage calculation in EMS providers, including the administration of epinephrine, and particularly in pediatric patients:

> Medication Dosing Errors in Pediatric Patients Treated by Emergency Medical Services
> Prehospital Emergency Care, January-March 2012, Vol. 16, No. 1 : Pages 59-66

There are syringes available that have a fixed dose of 0.3 cc that could conceivably allow providers to draw up the appropriate dose of epinephrine from a multidose vial or ampoule for a patient of weight 30 kg or greater experiencing a serious allergic reaction. The syringes and the epinephrine are available at a small fraction of the cost

The question has been asked about whether this practice should be allowed for BLS providers.

Attachment G

July 11, 2013

JOINT COMMITTEE

TO CREATE A NATIONAL POLICY

TO ENHANCE SURVIVABILITY FROM

MASS CASUALTY SHOOTING EVENTS

HARTFORD CONSENSUS II

Concept to Action

On April 2, 2013, representatives from a select group of public safety organizations including law enforcement, fire, prehospital care, trauma care, and the military convened in Hartford, Connecticut to develop consensus regarding strategies to increase survivability in mass casualty shootings. A concept document resulted and became known as the Hartford Consensus. It includes an acronym to describe the needed response to active shooter and intentional mass casual events. The acronym is **THREAT**.

T - threat suppression

H - hemorrhage control

RE - rapid extrication to safety

A - assessment by medical providers

T - transport to definitive care

Within the framework of THREAT, there exists the opportunity to improve survival outcomes for the victims of active shooter and intentional mass casualty events through mutual collaboration and reinforcing responses. The Hartford Consensus stipulates that medical training for external hemorrhage control techniques is essential for all law enforcement officers. They should play a key role as the bridge between the law enforcement phase of the operation and the integrated rescue response. The interval from wounding to effective hemorrhage control can be minimized by law enforcement officers trained in hemorrhage control. This principle is central to the findings of the first Hartford Consensus. The purpose of the Hartford Consensus II held July 11, 2013, in Hartford, Connecticut was to develop strategies for focused actions to achieve the objectives of the first Hartford Consensus.

Fundamental Concepts

To maximize survival from an active shooter or an intentional mass casualty event there must be a continuum of care from the initial response to definitive care. The essence of this continuum involves the seamless integration of a hemorrhage control interventions. This process starts with the actions of the uninjured public or minimally injured victims and extends to the first responding law enforcement officers, then to EMS/Fire/Rescue personnel, and ultimately to definitive trauma care. These concepts must be scalable to facilitate implementation in communities of all sizes. The law enforcement response has evolved from the original concepts of surround and contain to a more modern and aggressive response. EMS/Fire/Rescue must be involved earlier in the care of these victims. They should have direct contact with the law enforcement personnel on the scene.

The Call to Action

No one should die from uncontrolled bleeding. Preventable death after an active shooter or an intentional mass casualty event should be eliminated through the use of a seamless, integrated response system. Each group below should perform the actions necessary to accomplish this goal.

- **Public**: Uninjured or minimally injured victims can act as rescuers. Everyone can save a life.
    - Recognize that the initial response to an intentional mass casualty event will be from uninjured bystanders and minimally injured victims.
    - Design education programs and implement training for a public response to an active shooter or intentional mass casualty event.
    - Pre-position necessary equipment in appropriate locations.
    - Recognize that in an active shooter event the education message should include the concept of "Run, Hide, Fight."
- **Law Enforcement**: External hemorrhage control is a core law enforcement skill.
    - Identify appropriate external hemorrhage control training for law enforcement officers.
    - Ensure appropriate equipment such as tourniquets and hemostatic dressings are available to every law enforcement officer.
    - Ensure assessment and triage of victims with possible internal hemorrhage for immediate evacuation to a trauma dedicated hospital.

- Train all law enforcement officers to assist EMS/Fire/Rescue in the evacuation of the injured.

- **EMS/Fire/Rescue**: The response must be more fully integrated and traditional role limitations revised.
    - Train to increase awareness and operational knowledge about the initial response to an active shooter or intentional mass casualty event.
        - It is no longer acceptable to stage and wait for casualties to be brought out to the perimeter.
        - Training must include hemorrhage control techniques including the use of tourniquets, pressure dressings, and hemostatic agents.
        - Training must include assessment, triage, and transport of victims with lethal internal hemorrhage and torso trauma to definitive trauma care
    - Incorporate Tactical Combat Casualty Care and Tactical Emergency Casualty Care concepts into EMS/Fire/Rescue training.
    - Modify the response doctrine to improve the interface between EMS/Fire/Rescue and law enforcement in order to optimize patient care.
    - Establish a common language for responders permitting each community to improve coordination, develop concurrent response, and establish mutually acceptable levels of operational risk between all public safety professionals to enhance the defense, rescue, treatment, extrication and definitive care of survivors.

- **Definitive Trauma Care**: Existing trauma systems should be utilized to optimize seamless care.
    - Provide trauma care to victims of an active shooter or an intentional mass casualty event based on available resources and the establishment of mitigation strategies that acknowledge community limitations.
    - Design, implement and practice plans to handle a surge in patient care demand from an active shooter or an intentional mass casualty event.

To achieve the goals of this call for action, education of all groups is required. The core Hartford Consensus concepts should not be limited to traditional public safety responders. Everyone can and should be an initial responder. Education should be tailored to the level of the responder. Everyone should be taught hemorrhage control. Professional first responders should also be taught airway management. Education for the patient care process should focus on THREAT and include:

- Rapid access to hemorrhage control
    - External hemorrhage control
        - Direct pressure
        - Tourniquet application
        - Hemostatic agents
    - Internal hemorrhage control
        - Rapid transportation and access to a trauma center
        - Prompt access to the operating room

        - Incorporation of new concepts in hemostatic resuscitation and damage control surgery that have been used successfully in recent military conflicts

With this significant change in approach to an active shooter or an intentional mass casualty event, a carefully conceived evaluative process to determine the efficacy of THREAT is warranted. Scientific evaluation of the implementation of Hartford Consensus concepts must ensure that future efforts are focused on ideas that are effective. The evaluation process should include measurement of the following:

- Accessibility of field hemorrhage control equipment for law enforcement, EMS/Fire/Rescue, and the general public
- Documentation of the use of hemorrhage control equipment by law enforcement, EMS/Fire/Rescue, and the general public
- Submission of relevant data to a national registry
- Analysis of the quantitative and qualitative aspects of the data submission process to a national registry
- Use of THREAT Training Guidelines by all relevant providers
- Integration of operational doctrine through policy development and enabling legislation across the country relevant to law enforcement, EMS/fire/rescue
- Compliance and efficacy of the after action report process
- Effectiveness of THREAT education
- Effectiveness of THREAT implementation
    - Effectiveness of THREAT suppression

        - Timelines and appropriateness of initial hemorrhage control
        - Timeliness and effectiveness of rapid extrication
        - Transportation to and interface with definitive care facilities
        - Readiness of definitive care facilities for control of internal hemorrhage
    - Reduction of preventable death
    - Local, regional, and national performance to identify opportunities for improvement and gaps in funding for research and development

To achieve the goals of this call to action a coalition of stakeholders must be established. To do this the following must be accomplished:

- Identify core national leaders
- Establish a communication plan for the widespread dissemination of THREAT
- Identify legislative priorities
- Engage in the legislative process at the national and state levels
- Engage in funding initiatives
- Implement pilot projects to demonstrate the effectiveness of the action principles of the Hartford Consensus.
- Partner with relevant groups including national, federal, state, law enforcement, fire, EMS, medical, nursing, military, professional, and voluntary organizations (Appendix I)

Conclusion

The Hartford Consensus II has generated a call to action in order to enhance survival from active shooter or intentional mass casualty events. The call to action engages the public, law enforcement, EMS/Fire/Rescue and definitive care facilities. It embodies the principles of

THREAT and calls for modification of the initial responses to these events. A broad educational strategy and a robust evaluation of the implementation of THREAT are needed to quantify the benefits of this approach to the management of active shooter and mass casualty events.

The Hartford Consensus II was attended by:

Lenworth Jacobs, MD, Board of Regents American College of Surgeons

Vice President, Academic Affairs, Hartford Hospital

Michael Rotondo, MD, Chair, Committee on Trauma, American College of Surgeons

Norman McSwain, MD, Director, PreHospital Trauma Life Support

David Wade, MD, Chief Medical Officer, Federal Bureau of Investigation

William Fabbri, MD, Medical Director EMS, Federal Bureau of Investigation

Alexander Eastman, MD, Major Cities Police Chief Association

Frank Butler, MD, Chairman - Department of Defense Tactical Combat Casualty Care Committee

John Sinclair, Past Director, International Association of Fire Chiefs

Karyl Burns, RN, PhD, Research Scientist, Hartford Hospital

Kathryn Brinsfield, MD, National Security Staff, Executive Office of the President.

Richard Carmona, MD, 17th Surgeon General, United States

Richard Serino, Deputy Administrator of the Federal Emergency Management Agency

Alasdair Conn, MD, Chief of Emergency Services, Massachusetts General Hospital

Richard Kamin, MD, EMS Program Director, State of Connecticut, American College of Emergency Physicians Emergency Casualty Care Committee

Appendix I

American College of Surgeons

American College of Emergency Physicians

American Trauma Society

American Red Cross

Department of Defense Joint Trauma System

Department of Defense Committee on Tactical Combat Casualty care

Committee for Tactical Emergency Combat Casualty Care

Federal Bureau of Investigation

United States Fire Administration

National Highway Traffic Safety Administration Office of EMS

U. S. Department of Homeland Security Office of Health Affairs

U.S. Department of Homeland Security Federal Emergency Management Agency

International Association of Fire Chiefs

International Association of Firefighters

International Association of Chiefs of Police

International Association of EMS Chiefs

National Volunteer Fire Council

National Emergency Medical Service Advisory Committee

National Association of State Emergency Medical Services Officials

National Association of Emergency Medical Services Physicians

National Association of Emergency Medical Technicians

National Association of EMS Educators

National Tactical Officers Association

National Sheriff's Association

PreHospital Trauma Life Support (PHTLS)

Emergency Nurses Association

Society of Trauma Nurses

University law enforcement and health care organizations

Hospital accreditation organizations

Automobile manufacturers

Faith-based organizations

Attachment H

Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.™
(http://www.cdc.gov)

SEARCH

CDC A-Z INDEX

Emergency Preparedness and Response (/)

Blast and Bombing Injuries

In an instant, an explosion or blast can wreck havoc; producing numerous casualties with complex, technically challenging injuries not commonly seen after natural disasters such as floods or hurricanes.

CDC in collaboration with the TIIDE partners with leadership from America Trauma Society has developed seventeen topic-specific fact sheets on the treatment of blast injuries. Fact sheet topics range from blast lung and blast abdomen to the treatment of pediatric and older adult populations. The fact sheets have been disseminated both nationally and internationally as part of mass casualty response efforts.

Download Blast Injuries: Fact Sheets for Professionals booklet
[PDF - 10 MB] (/masscasualties/pdf/blast_fact_sheet_professionals-a.pdf)

Order Preparedness and Response Materials (http://wwwn.cdc.gov/pubs/ncipc.aspx)

Health and Safety After a Bombing

- After a Bombing: Health and Safety Information for Emergency Care Providers (/masscasualties/afterbombing-ecp.asp)
- After a Bombing: Health and Safety Information for the General Public (/masscasualties/afterbombing.asp)

Blast Injuries: Fact Sheets for Professionals

- Blast Injuries: Essential Facts (/masscasualties/blastessentials.asp)
- Injury Care: Prehospital (/masscasualties/blastinjury-prehospital.asp)
- Lung Injury: Prehospital Care (/masscasualties/blastlunginjury_prehospital.asp)
- Lung Injury (/masscasualties/blastlunginjury.asp)
- Radiological Diagnosis (/masscasualties/blastinjury-radio.asp)
- Crush Injury and Crush Syndrome (/masscasualties/blastinjury-crush.asp)
- Abdominal Injuries (/masscasualties/blastinjury-abdominal.asp)
- Traumatic Brain Injuries (/masscasualties/blastinjury-braininjury.asp)
- Extremity Injuries (/masscasualties/blastinjury-extremity.asp)
- Ear Injuries (/masscasualties/blastinjury-ear.asp)Eye Injuries (/masscasualties/blastinjury-eye.
- Thermal Injuries (/masscasualties/blastinjury-thermal.asp)
- Pediatrics (/masscasualties/blastinjury-pediatrics.asp)
- Older Adults (/masscasualties/blastinjury-olderadults.asp)
- Bombings and Mental Health (/masscasualties/blastinjury-bombings-mentalhealth.asp)
- Post Exposure Prophylaxis for Bloodborne Pathogens (/masscasualties/blastinjury-postexposure.asp)
- Radiological Dispersal Devices and Radiation Injury (/masscasualties/blastinjury-rdd.asp)

- Coping With Stress [PDF - 238 KB] (/masscasualties/pdf/coping-with-stress.pdf)

Social Media

Stay informed and join the discussion with social and new media tools. Buttons, eCards, widgets, rss, content syndication, and more.

Facebook Facebook (https://www.facebook.com/cdcemergency)

Twitter Twitter (http://twitter.com/CDCemergency)

RSS RSS (/rss/)

Read More (/socialmedia/) >

(http://www.ready.gov/)

(/socialmedia/index.asp)

Blast Preparedness and Response Training and Continuing Education

- Bombings: Injury Patterns and Care 2.0 Course (/masscasualties/blast_training.asp#course2)
- Bombings Injury Patterns and Care: System Preparedness Course 1.0 (/masscasualties/blast_training.asp#course1)

Related Resources & Publications

- Blast Injuries: What You Need to Know Webcast (http://www.jems.com/webinar/patient-care/blast-injuries-what-you-need-k)
- Blast Injuries: What Clinicians Need to Know (Podcast) (http://www2c.cdc.gov/podcasts/player.asp?f=10224)
- In a Moment's Notice: Surge Capacity in Terrorist Bombings (/masscasualties/surgecapacity.asp)
- Interim Guidance on Preparedness and Response (/masscasualties/terrorist_explosives.asp)

File Formats Help:

How do I view different file formats (PDF, DOC, PPT, MPEG) on this site? (http://www.cdc.gov

(http://www.cdc.gov/Other/plugins/#pdf)

Page last reviewed: February 1, 2013

Page last updated: March 2, 2012

Content source: National Center for Injury Prevention and Control (NCIPC) (http://www.cdc.gov/ncipc/) , Office Environmental Health (http://www.cdc.gov/about/organization/ccehip.htm)

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  - No FEAR Act (http://www.cdc.gov/diversity/nofearact/)
  - Inspector General (http://oig.hhs.gov/)
  - (http://www.cdc.gov/Other/disclaimer.html)
  - USA.gov (http://www.usa.gov/) (http://www.cdc.gov/Other/disclaimer.html)
- **Contact CDC**

Centers for Disease Control and Prevention
1600 Clifton Rd. Atlanta, GA 30333 USA
800-CDC-INFO (800-232-4636)
Contact CDC-INFO (http://www.cdc.gov/cdc-info/requestform.html)

Attachment I

BLS NR Statistics
(as of 04-08-2014)

State Statistics:

Results sent to National Registry = 4,779

Successful within 3 attempts: 2,859/3,979 = 72%

No test attempt to date = 800 of which 90% (717) have completed applications and 10% (83) have not completed their National Registry application. Reminder emails are sent weekly to those without applications providing them with instructions on how to complete the examination application.

Those who have tested:

	Attempted	Passed	%	Failed	%
First	3,979	2,486	62%	1,493	38%
Second	727	307	42%	420	58%
Third	179	66	37%	113	63%
Fourth	29	14	48%	15	52%
Fifth	7	3	43%	4	57%
Sixth	1	0	0%	1	100%

The above is reflective of the 'Under 18' test candidates that is not reflected when you pull our State report from National Registry. The statistics for the 'Under 18 group are as follows:

Results sent to National Registry = 339

No test attempt to date = 101 which is 30% of those eligible to test and have pending applications with National Registry.

	Attempted	Passed	%	Failed	%
First	238	103	43%	135	57%
Second	53	25	47%	28	53%
Third	6	2	33%	4	67%
Fourth	2	0	0%	2	100%
Fifth	1	1	100%	0	0%
Sixth	0				

The National statistics for this same period are as follows:

EMT

Report Date:	4/8/2014 5:46:19 PM
Report Type:	National Report
Registration Level:	EMT-Basic / EMT
Course Completion Date:	3rd Quarter 2012 to 2nd Quarter 2014
Training Program:	All

View Legend | Printer-Friendly Version

Show All | Show Only Percentages | Show Only Numbers

The results of your report request are as follows:

Attempted The Exam	First Attempt Pass	Cumulative Pass Within 3 Attempts	Cumulative Pass Within 6 Attempts	Failed All 6 Attempts	Eligible For Retest	Did Not Complete Within 2 Years
103100	71% (72905 / 103100)	80% (82490 / 103100)	80% (82820 / 103100)	0% (26 / 103100)	20% (20255 / 103100)	0% (0 / 103100)

EMR

Report Date:	4/8/2014 5:48:19 PM
Report Type:	National Report
Registration Level:	First Responder / EMR
Course Completion Date:	3rd Quarter 2012 to 2nd Quarter 2014
Training Program:	All

View Legend | Printer-Friendly Version

Show All | Show Only Percentages | Show Only Numbers

The results of your report request are as follows:

Attempted The Exam	First Attempt Pass	Cumulative Pass Within 3 Attempts	Cumulative Pass Within 6 Attempts	Failed All 6 Attempts	Eligible For Retest	Did Not Complete Within 2 Years
5131	74% (3776 / 5131)	79% (4053 / 5131)	79% (4054 / 5131)	0% (0 / 5131)	21% (1077 / 5131)	0% (0 / 5131)

Attachment J

Emergency Medical Services Training Funds Summary

As of April 8, 2014

Virginia
OFFICE OF EMERGENCY MEDICAL SERVICES
Virginia Department of Health

Virginia
OFFICE OF EMERGENCY MEDICAL SERVICES
Virginia Department of Health

EMS Training Funds Summary of Expenditures

Fiscal Year 2012	*Obligated $*	*Disbursed $*
40 BLS Initial Course Funding	$784,836.00	$416,612.42
43 BLS CE Course Funding	$122,640.00	$43,898.75
44 ALS CE Course Funding	$273,840.00	$85,776.25
45 BLS Auxiliary Program	$94,000.00	$15,200.00
46 ALS Auxiliary Program	$332,000.00	$182,910.00
49 ALS Initial Course Funding	$734,067.66	$711,625.49
Total	**$2,341,383.66**	**$1,456,022.91**

Fiscal Year 2013	*Obligated $*	*Disbursed $*
19 Emergency Ops	1,460.00	$755.00
40 BLS Initial Course Funding	$729,348.00	$353,384.36
43 BLS CE Course Funding	$125,160.00	$48,011.21
44 ALS CE Course Funding	$297,360.00	$77,315.00
45 BLS Auxiliary Program	$80,000.00	$18,120.00
46 ALS Auxiliary Program	$350,000.00	$158,645.00
49 ALS Initial Course Funding	$1,102,668.00	$531,376.03
Total	**$2,685,996.00**	**$1,191,253.10**

Fiscal Year 2014	*Obligated $*	*Disbursed $*
19 Emergency Ops	$1,120.00	$140.00
40 BLS Initial Course Funding	$729,504.00	$278,073.98
43 BLS CE Course Funding	$89,932.50	$24,377.50
44 ALS CE Course Funding	$216,777.50	$51,730.00
45 BLS Auxiliary Program	$128,000.00	$43,280.00
46 ALS Auxiliary Program	$300,000.00	$111,830.00
49 ALS Initial Course Funding	$1,164,024.00	$389,799.54
Total	**$2,629,358.00**	**$903,311.02**

Attachment K

Accredited Training Site Directory

As of April 8, 2014

Virginia
OFFICE OF EMERGENCY MEDICAL SERVICES
Virginia Department of Health

Accredited Paramedic[1] Training Programs in the Commonwealth

Site Name	Site Number	BLS Accredited	# of Alternate Sites	Accreditation Status	Expiration Date
Associates in Emergency Care	15319	No	4	National – Full	CoAEMSP
Center for EMS Training[1]	74015		1	**Rejected by CAAHEP**	Expired
Central Virginia Community College	68006	Yes	--	National – Initial	CoAEMSP
Historic Triangle EMS Institute	83009	No	1	CoAEMSP – Initial	CoAEMSP
J. Sargeant Reynolds Community College	08709	No	5	National – Initial	CoAEMSP
Jefferson College of Health Sciences	77007	Yes	--	National – Continuing	CoAEMSP
Lord Fairfax Community College	06903	No	--	CoAEMSP - LOR	
Loudoun County Fire & Rescue	10704	No	--	National – Continuing	CoAEMSP
American National University	77512	No	--	National – Full	CoAEMSP
Northern Virginia Community College	05906	No	1	National – Continuing	CoAEMSP
Patrick Henry Community College	08908	No	1	CoAEMSP – LOR	
Piedmont Virginia Community College	54006	Yes	--	National – Continuing	CoAEMSP
Prince William County Dept of Fire and Rescue	15312	Yes	-	CoAEMSP - LOR	
Rappahannock EMS Council Program	63007	No	--	CoAEMSP - LOR	
Southwest Virginia Community College	11709	Yes	4	National – Continuing	CoAEMSP
Southside Virginia Community College	18507	No	1	National – initial	CoAEMSP
Tidewater Community College	81016	Yes	3	National – Continuing	CoAEMSP
VCU School of Medicine Paramedic Program	76011	Yes	4	National – Continuing	CoAEMSP

Programs accredited at the Paramedic level may also offer instruction at EMT- I, AEMT, EMT, and EMR, as well as teach continuing education and auxiliary courses.

- [1]The Center for EMS site visit was conducted in December, 2012. CAAHEP has rejected their accreditation packet and their letter of review is no longer in effect and they are no longer accredited as an ALS training center. They are still listed because some students from their last program are continuing to test.
- Lord Fairfax Community College and Patrick Henry Community College have completed their first cohort class and have had their site visit and are awaiting information from CoAEMSP.
- Rappahannock EMS Council and Prince William County have completed their first cohort class and are in the process of completing their ISSR for CoAEMSP. They will have their accreditation visit scheduled within the next two years.
- Central Shenandoah EMS Council is in the process of accreditation at the paramedic level in Virginia which is described on the OEMS web page at: http://www.vdh.virginia.gov/OEMS/Training/Paramedic.htm

Accredited Intermediate[1] Training Programs in the Commonwealth

Site Name	*Site Number*	*BLS Accredited*	*# of Alternate Sites*	*Accreditation Status*	*Expiration Date*
Central Shenandoah EMS Council	79001	No	--	State – Full	May 31, 2015
Danville Area Training Center	69009	No	--	State – Full	July 31, 2014
Dabney S. Lancaster Community College	00502	No	--	State – Full	July 31, 2017
Hampton Fire & EMS	83002	Yes	--	State – Full	February 28, 2017
James City County Fire Rescue	83002	No	--	State – Full	February 28, 2014
John Tyler Community College	04115	No	--	State – Full	April 30, 2017
Nicholas Klimenko and Associates	83008	Yes	2	State – Full	July 31, 2015
Norfolk Fire Department	71008	No	--	State – Full	July 31, 2016
Rappahannock Community College	11903	Yes	2	State – Full	July 31, 2016
Roanoke Regional Fire-EMS Training Center	77505	No	--	State – Full	January 31, 2015
UVA Prehospital Program	54008	No	--	State – Full	July 31, 2014
WVEMS – New River Valley Training Center	75004	No	--	State – Full	June 30, 2017

Programs accredited at the Intermediate level may also offer instruction at AEMT, EMT, and EMR, as well as teach continuing education and auxiliary courses.

- The Southwest Virginia EMS Council has submitted an Intermediate Self-Study that is being reviewed by the Office and will then be forwarded to an accreditation team for their initial accreditation visit.
- Nicholas Klimenko and Associates added an Intermediate alternate site in Charlottesville, VA at Charlottesville-Albermarle Rescue Squad.

Accredited EMT Training Programs in the Commonwealth

Site Name	*Site Number*	*# of Alternate Sites*	*Accreditation Status*	*Expiration Date*
Navy Region Mid-Atlantic Fire EMS		--	State – Provisional	March 13, 2014
City of Virginia Beach Fire and EMS		--	State – Provisional	July 31, 2014

- The one year follow up visit is being planned for Navy Region and the City of Virginia Beach Fire and EMS.