

# Ukraine Prehospital Lessons Learned (*What Works and Doesn't*) Therapies / Devices / Training



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*First Faculty of Medicine*  
*Charles University*



# Disclaimer

The views and opinions expressed in this presentation are those of the presenter and do not necessarily reflect the official policy or position of any institution or organization. This material is intended for educational purposes only and should not be construed as professional or medical advice. Attendees are encouraged to consult relevant experts for specific guidance.

THOR has provided travel and accommodation support for the speaker. Atlas Medical, Rocky Mountain Aid Foundation, and TacMed North have assisted with logistics, transportation, and other Life Support activities across the country for operational purposes.

## Core Assumptions:

Ukraine has eclipsed NATO/partner COIN experience

Grassroots *Ground up* versus *top-down* models of support, enhancement and assistance challenged ( $\approx$ C2)

Lessons not shared have been lost – but not totally forgotten

LSCO threat requires interoperable medical planning, preparation and logistical support to reduce preventable morbidity and mortality

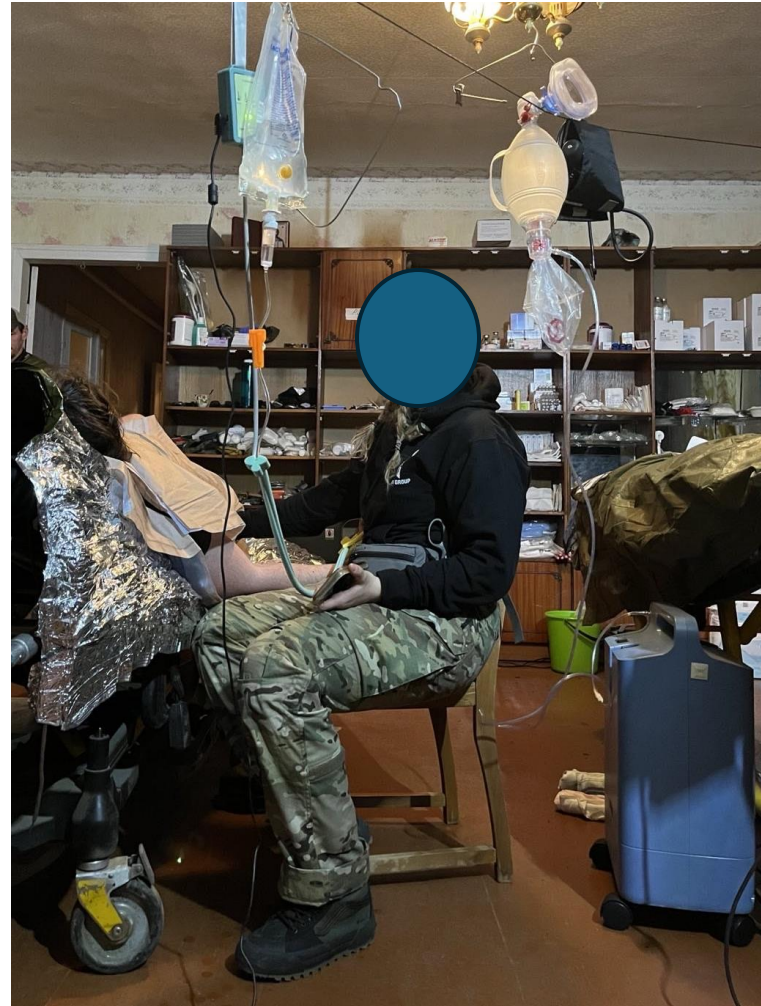
good medicine = force lethality

# Affiliation and Cooperation

- Emergency Medicine: East Surrey Hospital in the UK
- Researcher/Lecturer: CUP/LF1
- Consultant at Everbridge Assistance
- Practice and Train in Ukraine 2014-present day
- College of Remote and Offshore Medicine (CoROM)
- Atlas Medical
- Rocky Mountain Aid
- NATO MilMed COE
- Global Response Medicine (GRM)
- OSCE SMM, MOAS CMO
- GCMC Alumni/Scholar
- Sidusvitae, Pulse
- HEAL Corp / MoIA
- AFU, GUR/DIA other partners

# Objectives

- Updates
- Highlight the good
- Highlight the challenges
- Describe lines of effort
  - Reduce duplication
  - Enhance engagement
- Therapies
- Devices
- Training



# Timelines of the update: qualitative and anecdotal

- November 2023: East
- February to April 2024: East and north of UKR
- May to June 2024: Central
- September-October 2024: southeast

<https://www.understandingwar.org/backgrounders/russian-offensive-campaign-assessment-october-6-2024>

## Assessed Control of Terrain in Ukraine and Main Russian Maneuver Axes as of October 6, 2024, 9:30 AM ET



\* Assessed Russian advances are areas where ISW assesses Russian forces have operated in or launched attacks against but do not control

- February to August 2022 experience
- 1. Scene safety: EW, drones, advanced weapon systems and healthcare as target
- 2. Peripheral hemorrhage, TQ use, conversion and downgrading
- 3. Frequent mass casualty events overwhelming medical facilities
- 4. Systematic trauma assessments to reduce missed injuries
- 5. Standardized IKAKs, training and enhanced engagement

## COMMENTARY

MILITARY MEDICINE, 189, 1/2:17, 2024

### Prehospital Lessons From the War in Ukraine: Damage Control Resuscitation and Surgery Experiences From Point of Injury to Role 2

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 Mykola Buriachyk, MD, R&D<sup>‡‡</sup>; Manuel Martinez, PMD, CCEMT, DMT, TP-C<sup>§§</sup>;  
 Tracey A. Parnell, MD, MRM, PGD-RCDM (UK)<sup>|||</sup>; Leonid Brain, RN, MSN<sup>¶¶</sup>;  
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**ABSTRACT** The ongoing war in Ukraine presents unique challenges to prehospital medical care for wounded combatants and civilians. The purpose of this article is to identify, describe, and address gaps in prehospital care, casualty evacuation, and medical evacuation throughout Ukraine to share lessons for other providers. Observations and experiences of medical personnel were collected and analyzed, focusing on pain management, antibiotic use, patient assessment, mass casualty triage, blood loss, hypothermia, transport immobilization, and clinical governance. Gaps identified include limited access to pain management, lack of antibiotic guidance, inadequate patient assessment and triage, access to damage control resuscitation and blood, challenged transport immobilization practices, and challenges with clinical governance for both local and foreign providers. Improved prehospital care and casualty and medical evacuation in Ukraine are required, through increased use of empiric pain management, focused antibiotic guidance, enhanced patient assessment and triage in the form of training, access to prehospital blood, and better transport immobilization practices. A robust and active lessons learned program, trauma data capture, and quality improvement process is needed to reduce preventable morbidity and mortality in the war zone. The recommendations presented in this article serve as a starting point for improvements in prehospital care in Ukraine with potential to change prehospital training for the NATO alliance and other organizations operating in similar areas of conflict.

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The contents of this paper are original and not yet published or presented elsewhere. Briefings by co-authors to partners with elements and preliminary

findings of the themes and selected lessons presented here have been alluded to or cursorily described at:

Global Security Themes: Health Security in Future Conflict; M4-86-A-22. NATO SENIOR MEDICAL STAFF OFFICER COURSE (SMSOC), November 3, 2022, NATO School, Oberammergau, Germany.

Using Up One's 9-Liners - Discussion on lessons identified and learned in Medical Support in current Conflict; NATO TIDE SPRINT 41, Lillehammer, Norway, April 18, 2023.

OPENING KEYNOTE: INTERNATIONAL LECTURE, "Trauma Care in the Ukraine War." Trauma Association of Canada/Association Canadienne de Traumatologie, April 20, 2023, Edmonton, Alberta, Canada.

Special Operations Medical Association Scientific Assembly 2023 "Lessons Learned, Lessons Shared from the War in Ukraine." Special Operations Medical Association, Raleigh, NC, USA, May 18, 2023.

The views expressed here in this manuscript are solely those of the authors and do not reflect the official policy or position of the U.S. Army, U.S. Navy, U.S. Air Force, the DoD, the U.S. Government, the National Health Service of the UK, Charles University, or any corresponding nations relating to the co-authors, any additional author-associated institutes, affiliates, or systems. doi:https://doi.org/10.1093/milmed/usad253

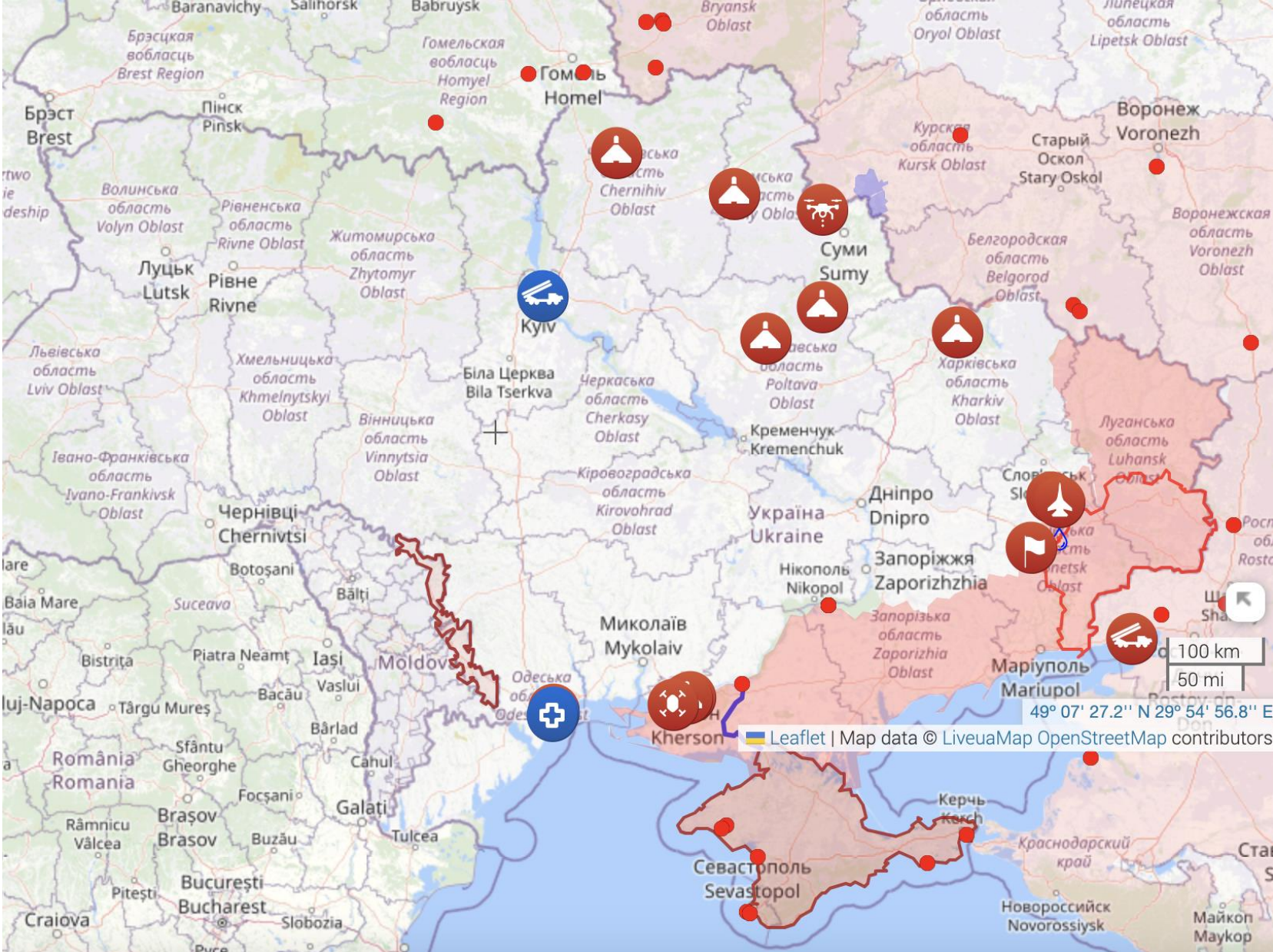
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# Updates?

The good, the bad and the ugly ... and the  
successes!

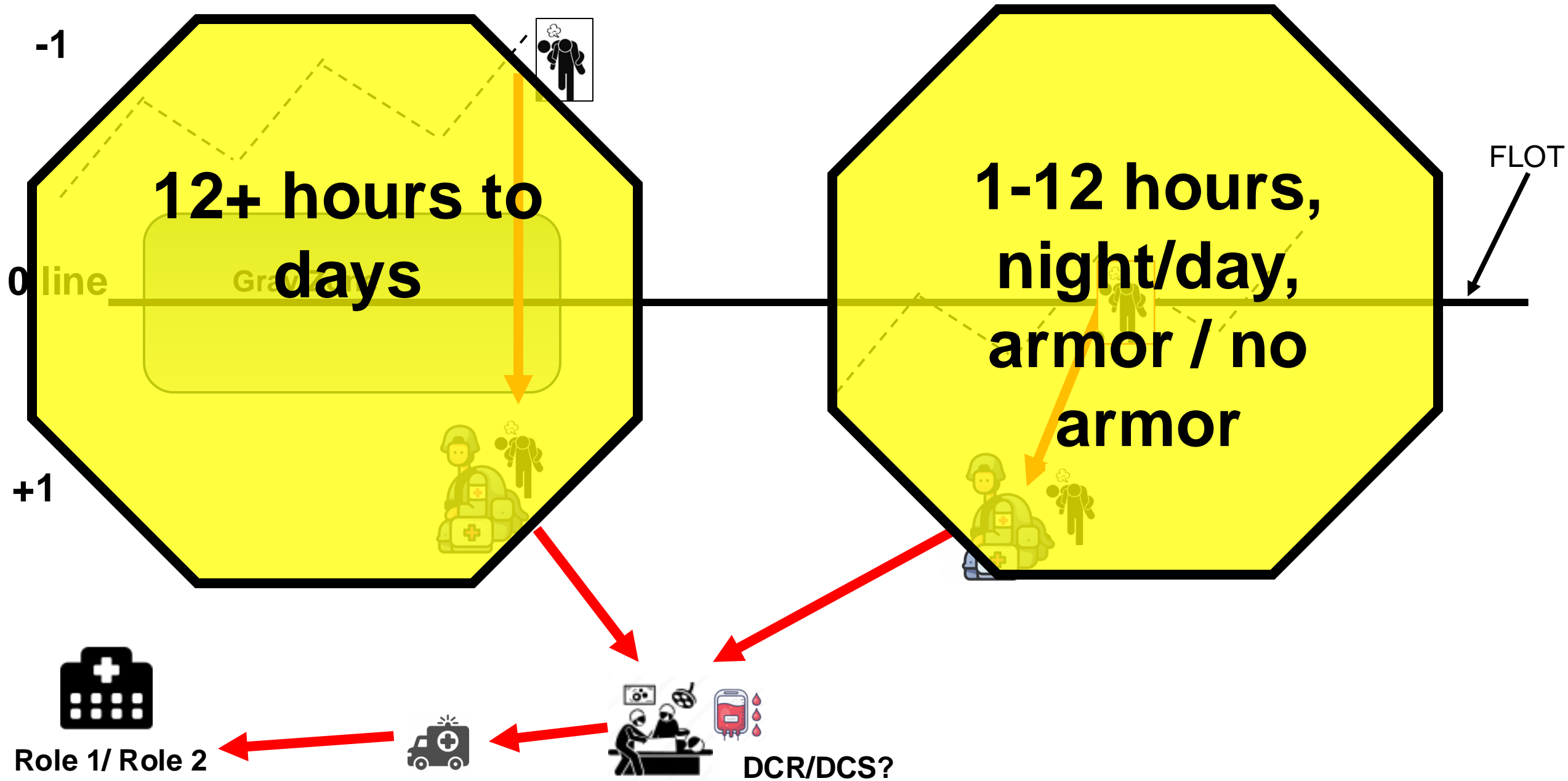


# Homogeneity?



<https://liveuamap.com/>

TACEVAC CASEVAC MEDEVAC

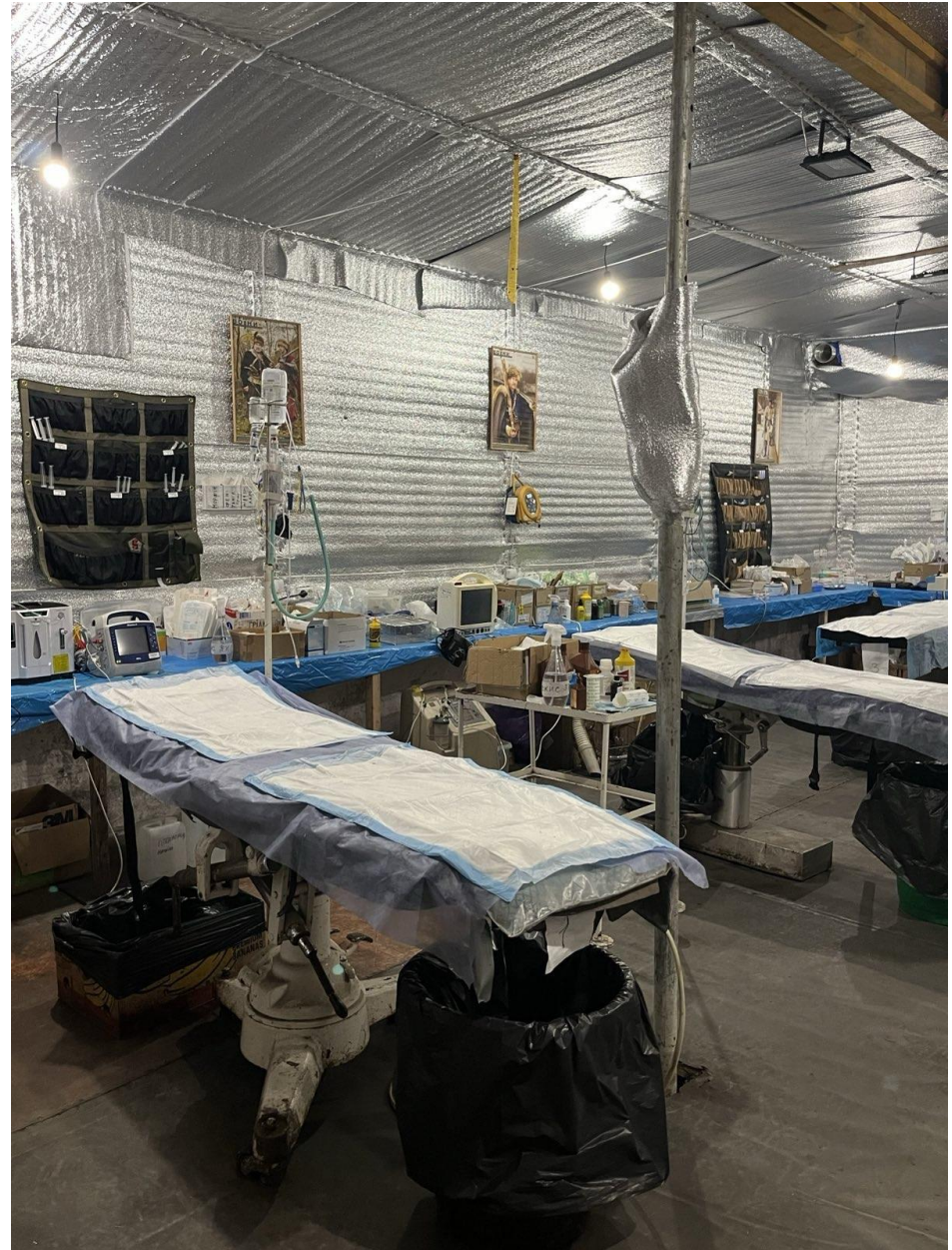


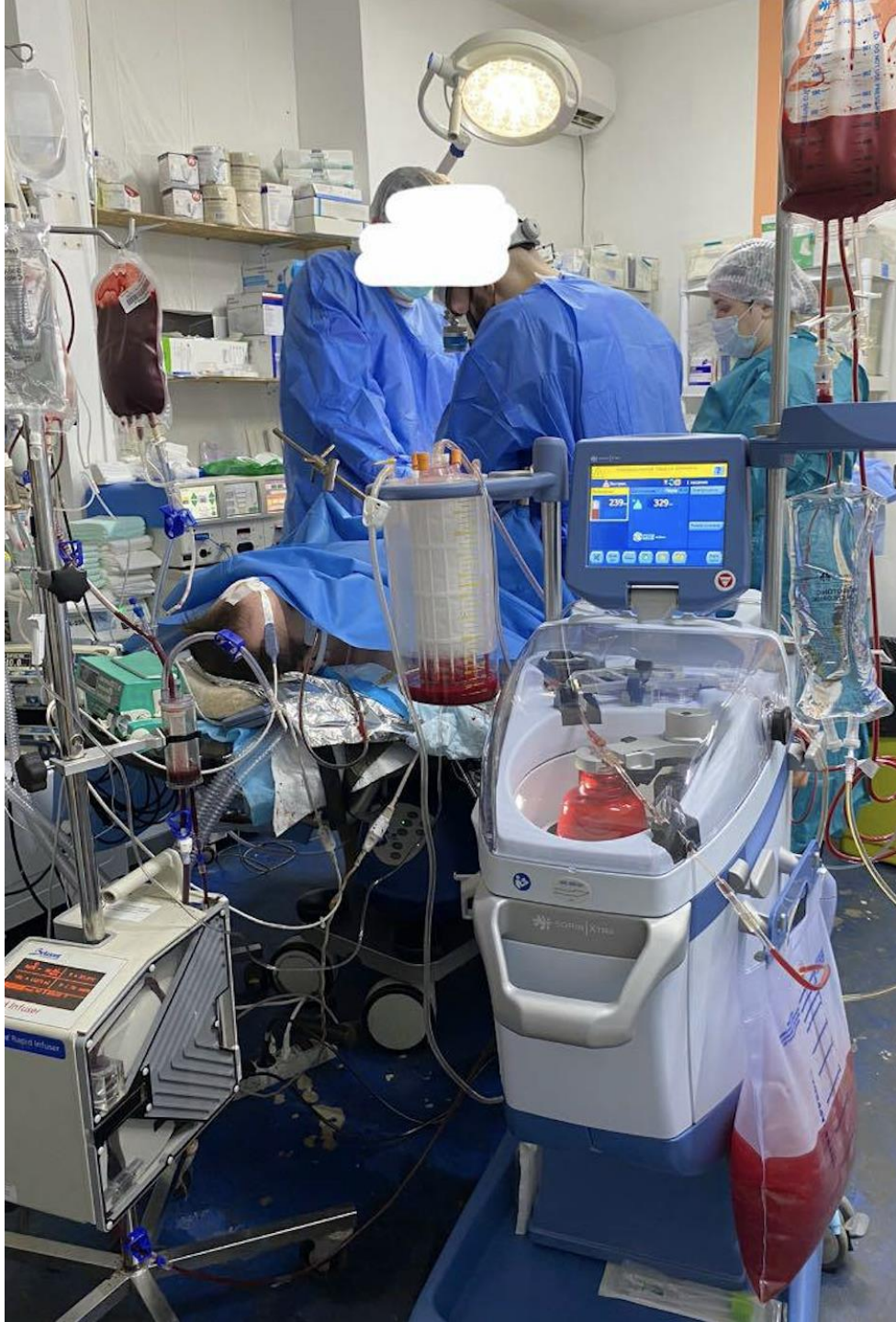
# Lexicon and Tyranny of Distance to medical support

- Casualty Collection Point (CCP) vs. Stabilization Point
- Role 1? Role 1+, Role 2(-), Role 2, Role 2+?
- Role 3?
- CASEVAC
- MEDEVAC
- CBRNE
- Point of Injury (PoI) Self-aid / buddy aid
- 20-30 mins to medical contact
- 24 hours? 5 days?!
- REBOA at Role 1?!
- Burn care
- “is anyone here a doctor?!”







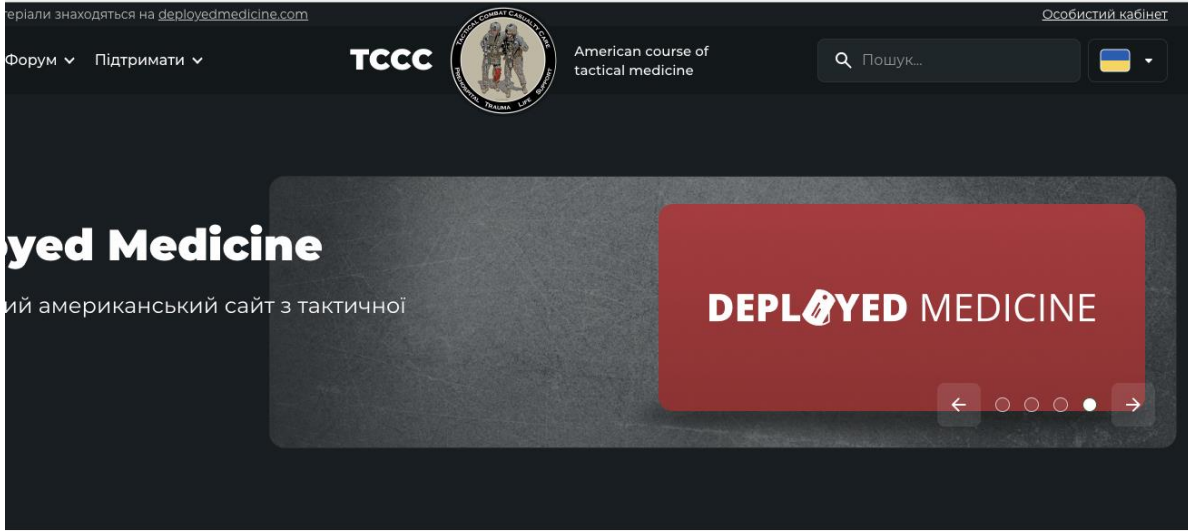




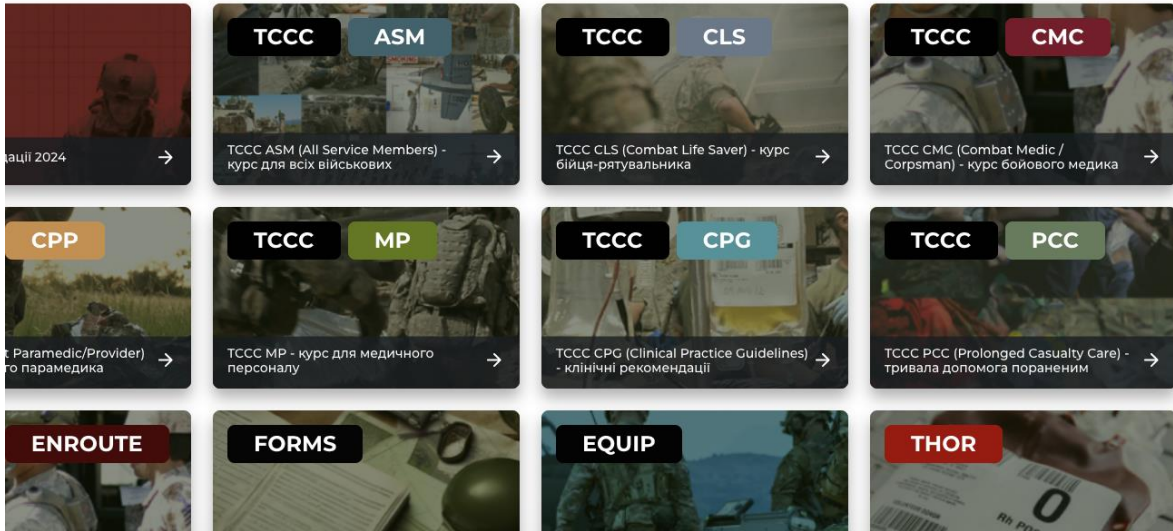






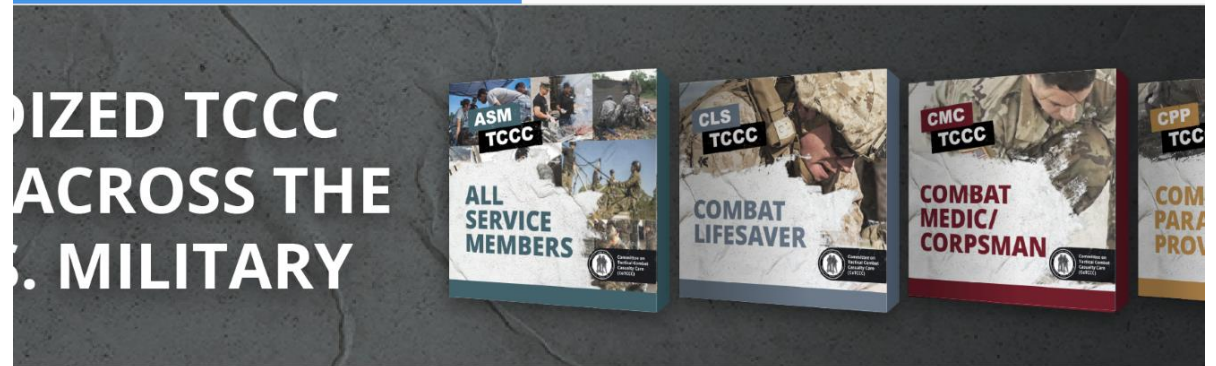


**Курси TCCC для військових**

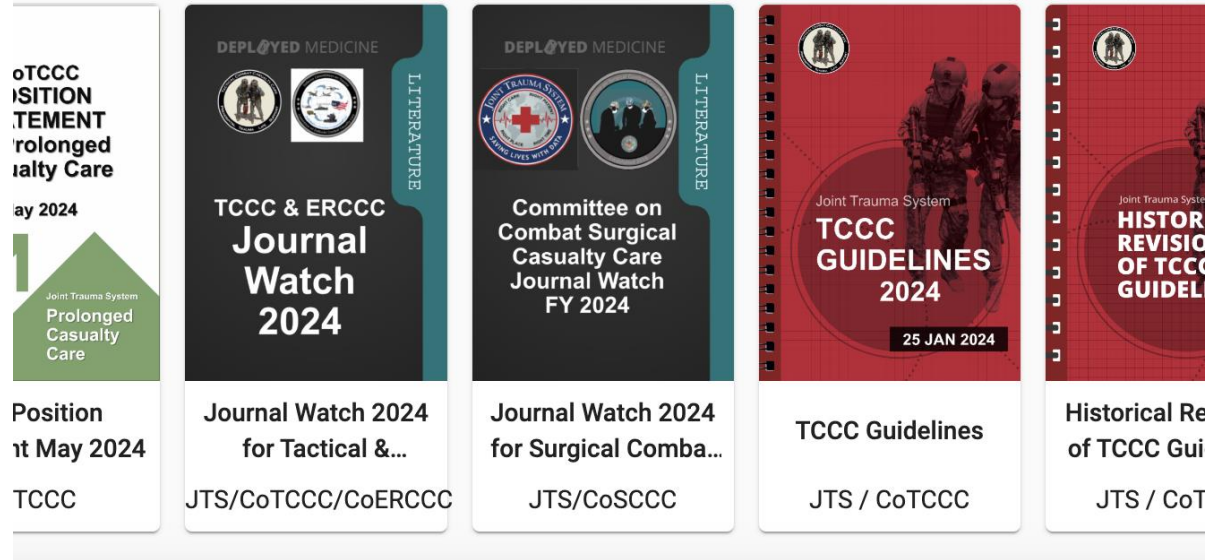


**Publications**

**Classes**



**Publications**



# Translations: therapy, innovation and training

- TCCC (2014-2019)
- DCR/PFC/PCC 2022 to present
- New PCC, ERC, radio frequency / EM, others

**TCCC CMC (Combat Medic / Corpsman) - combat medic course**

This collection contains the standardized curriculum for the TCCC CMC Course (TCCC CMC) developed by the Joint Trauma System.

Educational sections | Practical skills

**Educational sections**

CMC TCCC MODULE 01: CMC TCCC MODULE 02: CMC TCCC

**Три ФАЗИ ТССС**

- 1 ДОПОМОГА ПІД ВОГНЕМ (CIEV)
- 2 ДОПОМОГА В ПОЛІ ОДНУ
- 3 ДОПОМОГА НА ЕТАПІ ТАКТИЧНОЇ ЕВАКУАЦІЇ (TACEVAC)

БІЛЬШ РЕТЕЛЬНА ОЦІНКА СТАНУ ТА ВИКОНАННЯ ПЕРЕДЕВАКУАЦІЙНИХ ПРОЦЕДУР

Всі оригінальні матеріали знаходяться на [deployedmedicine.com](http://deployedmedicine.com)

Про проект | Форум | Підтримати

**TCCC** American course of tactical medicine

Пошук...

Особистий каб.

протоколи з безпечного та ефективного переливання цільної крові.

**Про розділ**

Даний курс про переливання цільної крові містить необхідні знання, інформацію та протоколи з безпечного та ефективного переливання цільної крові. Цей курс буде корисним для всіх медичних працівників та бойових медиків.

Застережуємо, що застосування цих знань без проходження відповідної підготовки на курсах, сертифікованих МОЗ, заборонено законодавством України.

Курс починається з основних знань, таких як фізіологія геморагічного шоку, фізіологія системи крові, визначення ризику та користі, а також оцінка ризиків. Також у курсі розглядається поняття "потреба крові", "забір крові", "переливання крові" та підведемо підсумки.

Курс створено мережею досліджень гемостазу та оксигенації **THOR** - Trauma Hemostasis & Oxygenation Research Network. Дякуємо мережі **THOR** за створення цього унікального курсу і за дозвіл перекласти його українською мовою.

Українську версію курсу створено завдяки роботі команди [tccc.org.ua](http://tccc.org.ua) - ГО Реформація, АУМФ та Всеукраїнською радою реанімації.

Проходження курсу потребує реєстрації, яка є безкоштовною.

**Зміст курсу**

Читати далі

# NAEMT: update

- Roughly 9 centers
- Conducting standardized training
- TQ conversion
- TCCC, stop the bleed
- Excellent intermediate step for the certified DCR course in country

Military Medical Clinical Center of Western Region	Lviv		UKRAINE
Ukrainian Special Operations Forces	Berdychiv	Zhytomyr region	UKRAINE
Kyiv Emergency and Medical Catastrophe Center	Kyiv	Kyiv	UKRAINE
PULSE	Odesa		UKRAINE
ODESA NATIONAL MEDICAL UNIVERSITY	Odesa	Odesa	UKRAINE
Karazin Medical Simulation Center	Kharkiv	Kharkiv Oblast	UKRAINE
ALL-UKRAINIAN RESUSCITATION COUNCIL AND EMERGENCY MEDICINE	Starychi		UKRAINE
National EMS center MOH of Ukraine	Kyiv		UKRAINE
Charitable Foundation "Soloma Cats"	Kyiv		UKRAINE
Volunteer medical battalion "Hospitallers"	Kyiv	Kyiv	UKRAINE
Trident Core Medicine	Kyiv	Kyiv Region	UKRAINE
NPO Tactical Medicine NORTH	Korostyshyv	Zhytomyr region	UKRAINE

<https://www.naemt.org/education/authorized-naemt-training-centers>



## JOINT TRAUMA SYSTEM CLINICAL PRACTICE GUIDELINE (JTS CPG)



### Analgesia and Sedation Management during Prolonged Field Care

The intent of this guideline is to identify potential issues one must consider when providing analgesia with or /without sedation for an extended time. This guideline begins where Tactical Combat Casualty Care (TCCC) guidelines end.

#### Contributors

LTC Jeremy Pamplin, MD  
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SFC Andrew Penny, 18D  
SFC Robert Olufs, 18D  
SFC Justin Rapp, 18D

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Col Stacy Shackelford, MD

First Publication Date: 11 May 2017

Publication Date: 11 May 2017

01 Sep 2023 update: SAVeO2 oxygen parameters

**CMC**  
**TCCC**

**COMBAT MEDIC/  
CORPSMAN**



# КУРС ДОПОМОГИ ПОРАНЕНИМ В УМОВАХ БОЙОВИХ ДІЙ

МОДУЛЬ 15:  
ЗНЕБОЛЮВАЛЬНІ ПРЕПАРАТИ  
(АНАЛЬГЕЗІЯ)





Hb



# Clinical Governance

- 100% legal for providers to offer blood in the far forward and prehospital space
- Must be registered provider and received training
  - Can be NAEMT TCCC provider
  - CMC Trained provider
- UTCC blood course

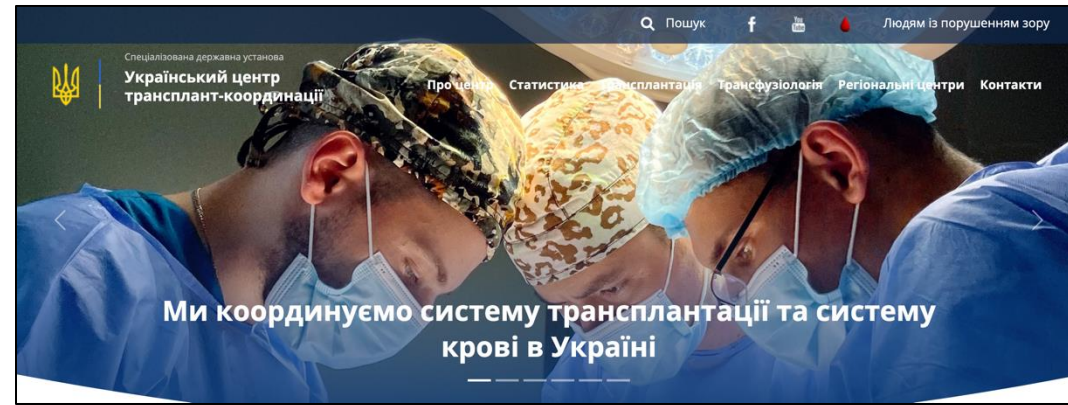
GMM					
legislation or national protocol published links					
No	Link	Ukrainian References	English References	Links for original English documents	Comments
<b>Tourniquet use</b>					
1	<a href="https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-15032022-488-pro-">https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-15032022-488-pro-</a>	Наказ МОЗ України від 15.03.2022 № 488 "Про	Order of the Ministry of Health of Ukraine dated March 15,		In Chapter II paragraph 8 of attached
2	<a href="https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-04032022-412-pro-">https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-04032022-412-pro-</a>	Наказ МОЗ України від 04.03.2022 № 412 "Про	Order of the Ministry of Health of Ukraine dated 04.03.2022		Timings, indications, counterindic
<b>Blood transfusion (in hospitals)</b>					
1	<a href="https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-11072022-1192-pro-">https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-11072022-1192-pro-</a>	Наказ МОЗ України від 11.07.2022 № 1192 "Про	Order of the Ministry of Health of Ukraine dated 11.07.2022		Among other it is allowed to use w
<b>Intubation</b>					
1	<a href="https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-05062019-1269-pro-">https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-05062019-1269-pro-</a>	Наказ МОЗ України від 05.06.2019 № 1269 "Про	Order of the Ministry of Health of Ukraine dated June 5, 2019		Chapter 7, protocol 7.1, sets indic
2	<a href="https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-25042024-714-pro-">https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-25042024-714-pro-</a>	Наказ МОЗ України від 25.04.2024 № 714 "Про	Order of the Ministry of Health of Ukraine dated April 25,		The procedure for rapid sequential
3	<a href="https://moz.gov.ua/uploads/11/545450-dn-714_25042024_dod1.pdf">https://moz.gov.ua/uploads/11/545450-dn-714_25042024_dod1.pdf</a>	затвердження нових клінічних протоколів за темою	2024 No. 714 "On the approval of new clinical protocols on		whole blood or blood component
4	<a href="https://moz.gov.ua/uploads/11/545450-dn-714_25042024_dod1.pdf">https://moz.gov.ua/uploads/11/545450-dn-714_25042024_dod1.pdf</a>	"Бойова травма". Додаток 3 "Бойова торакальна травма"		<a href="https://acc.org.ua/files/downloads/acute-extremity-">https://acc.org.ua/files/downloads/acute-extremity-</a>	resuscitation
<b>Chest tube</b>					
1	<a href="https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-25042024-714-pro-">https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-25042024-714-pro-</a>	Наказ МОЗ України від 25.04.2024 № 714 "Про	Order of the Ministry of Health of Ukraine dated April 25,		
2	<a href="https://moz.gov.ua/uploads/11/545452-dn-714_25042024_dod3.pdf">https://moz.gov.ua/uploads/11/545452-dn-714_25042024_dod3.pdf</a>	затвердження нових клінічних протоколів за темою	2024 No. 714 "On the approval of new clinical protocols on		
<b>Ultrasounds</b>					
1	<a href="https://zakon.rada.gov.ua/rada/show/va117282-02#Text">https://zakon.rada.gov.ua/rada/show/va117282-02#Text</a>	Наказ МОЗ України від 29 березня 2002 р. № 117	Order of the Ministry of Health of Ukraine dated March 29,		In the requirements for the ER doct
2	<a href="https://zakon.rada.gov.ua/laws/show/l1192_20m17">https://zakon.rada.gov.ua/laws/show/l1192_20m17</a>	Наказ МОЗ України від 24 вересня 2020 № 1279 "Про	Order of the Ministry of Health of Ukraine dated September		In a typical set of an emergency de
<b>Radiology</b>					
1	<a href="https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-16072024-1237-pro-">https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-16072024-1237-pro-</a>	Наказ МОЗ України від 16.07.2024 № 1237 "Про	Order of the Ministry of Health of Ukraine dated 16.07.2024		
2	<a href="https://moz.gov.ua/storage/uploads/9587899-719-4484-8d8c-8ccf52d4e6fdn_1237_22072024_dod_4.pdf">https://moz.gov.ua/storage/uploads/9587899-719-4484-8d8c-8ccf52d4e6fdn_1237_22072024_dod_4.pdf</a>	затвердження нових клінічних протоколів за темою	No. 1237 "On the approval of new clinical protocols on the		Annex 3 "ARDS" describes the perfo
3	<a href="https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-25042024-714-pro-">https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-25042024-714-pro-</a>	Наказ МОЗ України від 25.04.2024 № 714 "Про	Order of the Ministry of Health of Ukraine dated April 25,		ray in an antero-posterior project
4	<a href="https://moz.gov.ua/uploads/11/545451-dn-714_25042024_dod4.pdf">https://moz.gov.ua/uploads/11/545451-dn-714_25042024_dod4.pdf</a>	затвердження нових клінічних протоколів за темою	2024 No. 714 "On the approval of new clinical protocols on		Annex 4 describes the methods of i
<b>Burn protocols</b>					
1	<a href="https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-06102023-1767-pro-">https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-06102023-1767-pro-</a>	Наказ МОЗ України від 09.10.2023 № 1767 "Про	Order of the Ministry of Health of Ukraine dated 09.10.2023		
2	<a href="https://moz.gov.ua/uploads/10/50393-dn-1767_09102023_dod.pdf">https://moz.gov.ua/uploads/10/50393-dn-1767_09102023_dod.pdf</a>	затвердження Стандарту медичної допомоги "Опіки".	No. 1767 "On approval of the standard of medical care		
3	<a href="https://www.doc.gov.ua/wp-content/uploads/2023/10/2023_kn_episky.pdf">https://www.doc.gov.ua/wp-content/uploads/2023/10/2023_kn_episky.pdf</a>	Додаток "Стандарт медичної допомоги" Опіки".	"Burns", Annex - "The standard of medical care "Burns"		Additional document to the order,
<b>Acute trauma care</b>					
1	<a href="https://acc.org.ua/files/downloads/acute-extremity-">https://acc.org.ua/files/downloads/acute-extremity-</a>		Order of the Ministry of Health of Ukraine dated April 25,	<a href="https://acc.org.ua/files/downloads/acute-extremity-">https://acc.org.ua/files/downloads/acute-extremity-</a>	Fundamental document with anne
2	<a href="https://acc.org.ua/files/downloads/anesthesia-for-trauma-">https://acc.org.ua/files/downloads/anesthesia-for-trauma-</a>			<a href="https://acc.org.ua/files/downloads/anesthesia-for-trauma-">https://acc.org.ua/files/downloads/anesthesia-for-trauma-</a>	trauma. Includes Trauma patient ir

<https://moz.gov.ua/uk/decrees/nakaz-moz-ukraini-vid-11072022--1192-pro-zatverdzhennja-standativ-medichnoi-dopomogi-nadannja-medichnoi-dopomogi-postrazhdalim-z-gemoragichnim-shokom-na-dogospitalnomu-ta-gospitalnomu-etapah-pri-travmi>



# Transfusion: Ukraine

- Utcc.gov.ua
- LTOWB?
  - Produce
  - Equipment / consumables required
- Universal donor
  - Offerings
  - EU/NATO
- Experiences from the field
- Blood course
  - Registered personnel only
  - 4 days
  - 350+ trained



**НАБОРИ ДЛЯ ПЕРЕЛИВАННЯ КРОВІ** 

**FARMA**

ПОЛЬОВА І ТРЕНУВАЛЬНА ВЕРСІЇ



 Також постачання медичного обладнання військовим: для транспортування, зберігання та підігріву крові 

farma.kyiv.ua  sidusvitae.org





№ 201633  
A (III)  
КобзарьОВА  
A (III)  
№ 201630  
A (III)  
№ 201571  
№ 201633  
A (III)  
КобзарьОВА  
A (III)  
№ 201633  
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вісзапорожена  
92.0015918  
10.02.2023  
18.02.2023  
СІМ

Об'єм жовкої білкової частини переливної крові не перевищує 10% загального об'єму крові. Переливати крові з даною частинкою можна тільки при температурі від -25 до +5 °С.  
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Плазма  
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з карантину

Еритроцити  
Об'єм 300 мл  
Дата заготовки  
Термін придатності  
Антикоагулянт  
Дата забору

Еритроцити  
Об'єм 333 мл  
Дата заготовки  
Термін придатності  
Антикоагулянт  
Дата забору

Еритроцити  
Об'єм 333 мл  
Дата заготовки  
Термін придатності  
Антикоагулянт  
Дата забору

Еритроцити  
Об'єм 373 мл  
Дата заготовки  
Термін придатності  
Антикоагулянт  
Дата забору

Еритроцити в додатковому розчині (ІХЛА) №10.01.0074034  
Об'єм 218 мл  
Дата заготовки  
Термін придатності  
Антикоагулянт  
09.10.2023  
20.11.2023  
МІД 289522

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10.01.0074034 • O(I)  
09.10.2023 Еритроцити  
Rh. neg.  
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020009636 21  
06.50.0011759 • A(II)  
12.10.2023  
МІП України  
КНП "ОБЛАСНИЙ ЦЕНТР КРОВІ" ЖОР  
Еритроцити у додатковому розчині  
№06.50.0011759  
12.10.2023  
Rh. neg.  
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kell-ner.

Еритроцити  
Об'єм 333 мл  
Дата заготовки  
Термін придатності  
Антикоагулянт  
Дата забору

Додатковий розчин: СІМ 100 мл  
Температура зберігання: +20...+6°C  
ДОДАТКОВА ІНФОРМАЦІЯ  
1. Висока температура крові ризикує за систему АВО  
2. Приблизно 10% ризикує за систему АВО  
3. Приблизно 10% ризикує за систему АВО  
4. Висока температура крові ризикує за систему АВО  
Використовувати тільки для переливання крові

# DonorUA



## ДОНАЦІЯ У БЛАДМОБІЛІ БІЛЯ З ПОЛІКЛІНІКИ



**Львів**  
вул. Повітряна, 99



**24 жовтня**



**9:00 - 12:00**



# Plus+ up blood

- Need more: Belmont systems, Q-flows, MEQU units
  - Stab point/Role 1
  - Critical care transport / vehicles of opportunity
  - Far forward training and supplies
- Certifiable training sites and support:
  - Need Several hundred per week
  - Combined with other training (TCCC, mandatory and provisional unit training)
  - EU based training
  - English for volunteers and interoperability





# Good Medicine = force lethality

**1. Challenges in prehospital care:** The Ukraine conflict worsened gaps in medical infrastructure, training, and logistics, highlighting the need for standardization.

**2. Extended evacuations:** Prolonged evacuations and limited access to advanced care remain significant challenges despite several improvements across a broad range of issues.

**3. International collaboration:** NATO's efforts to standardize care and enhance training have improved Ukraine's prehospital care. Much more can be done and will continue to reduce preventable morbidity and mortality.

**4. Role of NGOs:** NGOs fill medical training and equipment gaps but face challenges in scalability and sustainability. Overreliance and a major area of clinical governance and intermobility challenge. Disparate ideas, competition for resources and unnecessary drama.

**5. Global health engagement:** NATO's ongoing support strengthens medical readiness and health partnerships in Ukraine.

## COMMENTARY

MILITARY MEDICINE, 00, 00:1, 2024

### Enhancing Prehospital Care During the Conflict in Ukraine: NATO's Role in Global Health Engagement

Anna Onderková, MD, MSc<sup>1</sup>; John Quinn, MD, MPH, PhD, EMT-P<sup>2,3</sup>; Michael Meoli, EMT-P, TP-C<sup>4</sup>; Daniel Taylor, EMT-P, TP-C, WP-C, CCEMT-P, FAWM<sup>5</sup>; Sergiy Nesterenko, MD<sup>6</sup>; Jessica M. Schramm, PA-C<sup>7</sup>; A.J. Gimpelson, FP-C, CCP-C, TP-C, CIPC, IC<sup>8</sup>; Aebhric O'Kelly, M.Psy, DTN, FRSM, FAWM<sup>9</sup>; CAPT (OF-5) Steven Parks, NC, USN<sup>10</sup>; Jamlia Rizek, MBA, MSN, RN, CEN, CPEN, NHDP-BC, NRP<sup>11</sup>; CPT Terri Davis, MD, FAWM<sup>12,13</sup>; Denys Surkov, MD, PhD<sup>14</sup>; Bohdan Cherniawski, BScN, RN<sup>15</sup>; Rajeev Fernando, MD<sup>16,17</sup>

#### ABSTRACT

##### Introduction:

The conflict in Ukraine, ongoing since 2014 and escalating with the Russian invasion in 2022, has unveiled profound challenges in prehospital care essential for the survival and recovery of warfighters and civilians alike, necessitating a detailed examination of the current medical response mechanisms and their effectiveness.

##### Materials and Methods:

This study provides an overview of these challenges and examines how these critical vulnerabilities have impacted the delivery of medical care in war-torn regions. It also explores the role of NATO and its member states in addressing these challenges, focusing on the efforts to standardize prehospital care, enhance training, and foster interoperability among medical services. Furthermore, it explores the role of global health engagement through NGOs in addressing these prehospital care gaps within the Ukrainian conflict zone, drawing from direct observations, expert testimonials, and secondary data.

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<sup>5</sup>Frozen Medical, Boston, MA 13202, USA

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The views expressed are solely those of the authors and do not reflect the official policy or position of the U.S. Army Medical Center of Excellence, the U.S. Army Training and Doctrine Command, or the Departments of Army, DoD, or U.S. Government, the National Health Service of the United Kingdom, Charles University, First Faculty of Medicine, the National Academy of the Ministry of Internal Affairs for Ukraine, the Ministry of Internal Affairs for Ukraine, the Ministry of Health for Ukraine, the Armed Forces of Ukraine (AFU), or any of the affiliate bodies, agencies or supporting institutions, policy or viewpoints, past, present, or future.

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# Training: Qualitative Data

## Enhancing Prehospital Care in the Ukraine Conflict

ultely a key to success

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ncompassing standard  
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rther advancements in  
re.

T.D. participated in TRECC working group process and provided manuscript proofreading and subject matter expertise input.

D.S. supported the NAEMT section and standardized courses for Large-Scale Combat Operations in Ukraine and within NATO.

B.C. contributed insights into nursing practices in conflict zones and provided manuscript proofreading and subject matter expertise.

### SUPPLEMENTARY MATERIAL

Supplementary material is available at *Military Medicine* online.

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### CONFLICT OF INTEREST STATEMENT

The views expressed are solely those of the authors and do not reflect the official policy or position of the U.S. Army Medical Center of Excellence, the U.S. Army Training and Doctrine Command, or the Departments of Army, Department of Defense, or U.S. Government, the National Health Service (NHS) of the United Kingdom, Charles University, First Faculty of Medicine, the National Academy of the Ministry of Internal Affairs for Ukraine, the Ministry of Internal Affairs for Ukraine, the Ministry of Health for Ukraine,

Supplementary Table 1: Training courses offering standardized approaches to prehospital and trauma medicine.

Course	Focus	Leading Institution	Comments
Basic Life Support (BLS)	Basic life support and resuscitation (CPR and AED use)	American Heart Association (AHA)	Foundation-level algorithm. Easy to implement worldwide for the general medical responder.
Advanced Life Support (ALS)	Advanced life support (ALS)	European Resuscitation Council (ERC)	More detailed ALS training algorithm. Focus on resuscitation and planning for airway management in complex, high-stress, and high-risk conditions, in addition to resuscitation training.
Tactical Combat Casualty Care (TCCC)	First aid and resuscitation	Department of Defense (DoD)	TCCC has been highly successful and widely implemented in the US military, although the course is not available to non-military personnel. It is a highly practical, evidence-based, and standardized approach to prehospital care.

Course	Focus	Leading Institution	Comments
Prehospital Trauma Life Support (PHTLS)	Prehospital trauma life support (PHTLS)	American College of Surgeons (ACS)	Standardized approach to prehospital trauma care. Focus on resuscitation and planning for airway management in complex, high-stress, and high-risk conditions, in addition to resuscitation training.
Prehospital Trauma Life Support (PHTLS)	Prehospital trauma life support (PHTLS)	American College of Surgeons (ACS)	Standardized approach to prehospital trauma care. Focus on resuscitation and planning for airway management in complex, high-stress, and high-risk conditions, in addition to resuscitation training.

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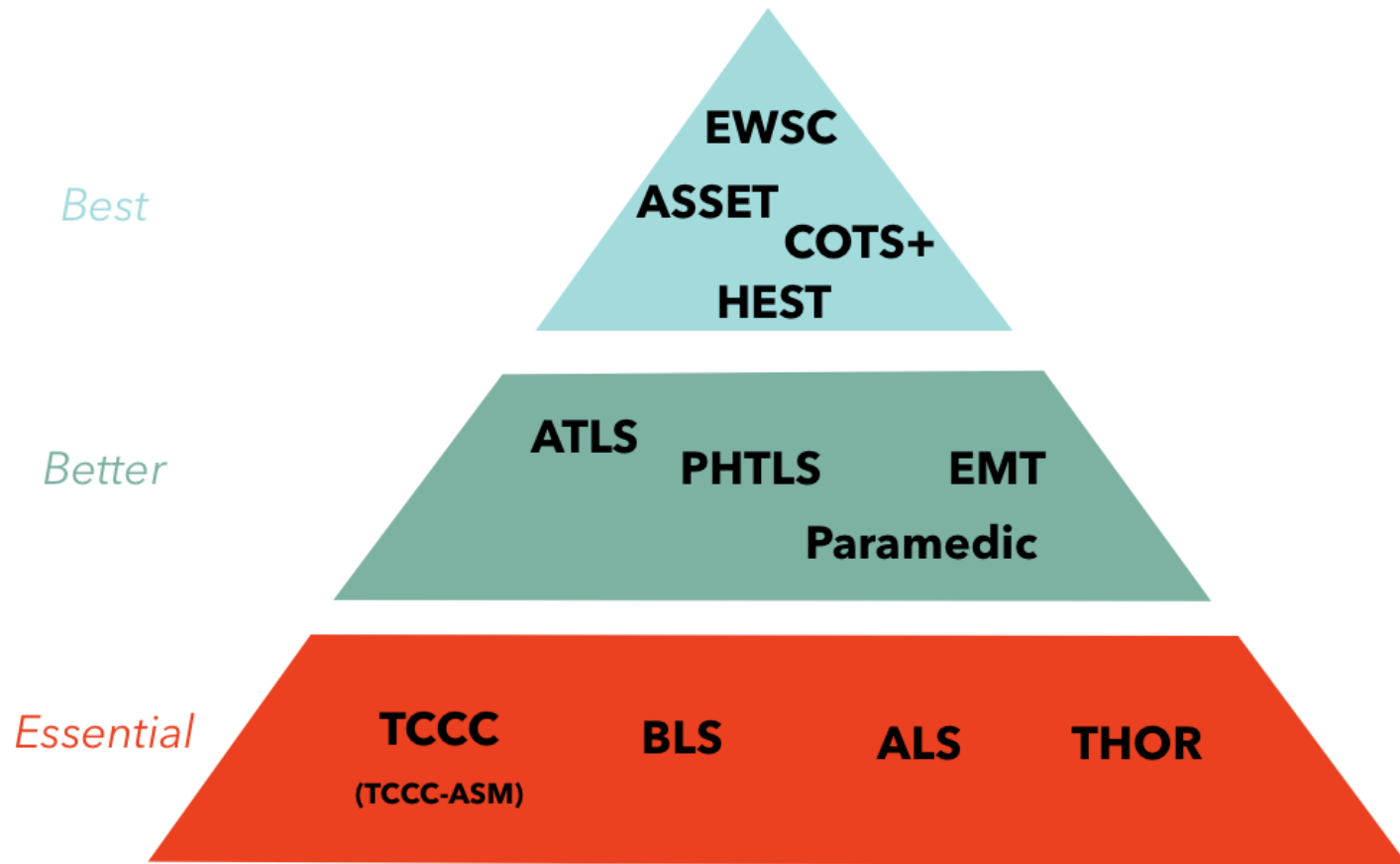
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Downloaded from <https://academic.oup.com/milmed/advance-article-abstract/doi/10.1093/milmed/kzab001/6588881>

## Supplementary Table 2: Broader Implications and Lessons Learned

Key Area	Insights and Actions	Implications for Future Engagements
<b>Prehospital Care in Conflict Zones</b>	<ul style="list-style-type: none"> <li>Importance of rapid adaptation, robust training, and resilient medical supply chains</li> <li>Need for responsive and effective medical care despite conflict-related disruptions</li> </ul>	Enhanced preparedness and response in similar future scenarios. Medical Readiness based on preparedness.
<b>NATO's Role in Strengthening Medical Responses</b>	<ul style="list-style-type: none"> <li>Facilitated standardization, training, and best practice sharing</li> <li>Enhanced quality of prehospital care</li> </ul>	Evidenced-based approaches to medical support in future conflicts
<b>Global Health Engagement Model</b>	<ul style="list-style-type: none"> <li>Benefits of collaborative approaches</li> <li>Potential for mutual learning and improvement in medical practices and sharing lessons</li> </ul>	Guideline for future military and humanitarian medical responses with enhanced interoperability
<b>Implications for Future NATO Engagements</b>	<ul style="list-style-type: none"> <li>Emphasis on interoperability and standardized training</li> <li>Integration of local and international resources, across all echelons of care</li> </ul>	Shaping of NATO's medical engagement strategies and increasing force lethality
<b>Reflections for Policy and Practice</b>	<ul style="list-style-type: none"> <li>Need for flexible, context-sensitive strategies</li> <li>Insights into complexities of healthcare in conflict settings</li> </ul>	Informing future policies and Clinical Practice Guidelines (CPGs) and practices in military medicine and humanitarian aid based on new technology and deployed weapons systems





*Additional*

- ETC**
- ACLS**
- PALS**
- WEMT**
- FP-C**
- CCP-C**
- ABLS**
- BTOMS**
- Austere emergency care**
- CLS**

Abbreviation	Full Form
<b>TCCC</b>	Tactical Combat Casualty Care
<b>TCCC-ASM</b>	Tactical Combat Casualty Care - All Service Members
<b>BLS</b>	Basic Life Support
<b>ALS</b>	Advanced Life Support
<b>THOR</b>	Trauma Hemostasis and Oxygenation Research
<b>ATLS</b>	Advanced Trauma Life Support
<b>PHTLS</b>	Prehospital Trauma Life Support
<b>EMT</b>	Emergency Medical Technician
<b>EWSC</b>	Emergency War Surgery Course
<b>ASSET</b>	Advanced Surgical Skills for Exposure in Trauma
<b>COTS+</b>	Combat Orthopedic Trauma Surgery
<b>HEST</b>	Hostile Environment Surgical Training
<b>ETC</b>	European Trauma Course
<b>ACLS</b>	Advanced Cardiovascular Life Support
<b>PALS</b>	Pediatric Advanced Life Support
<b>WEMT</b>	Wilderness Emergency Medical Technician
<b>FP-C</b>	Flight Paramedic Certification
<b>CCP-C</b>	Critical Care Paramedic Certification
<b>ABLS</b>	Advanced Burn Life Support
<b>BTOMS</b>	Battlefield Trauma Life Support for Advanced Medics
<b>CLS</b>	Combat Lifesaver
<b>Austere emergency care</b>	Medical care provided in remote, resource-limited settings

## War in Ukraine: TacMed Lessons Identified

### INTERNATIONAL LEGION MEDICAL SERVICE: PROPOSAL OF CHANGES

#### INTRODUCTION

It has been nearly 2 years since russia launched a full-scale invasion of Ukraine. (Yes, it is on purpose that we write russia with a small letter - following a recommendation of our national linguistic authorities). Here you must understand that this **war** actually started in 2014, following our Revolution of Dignity, russian annexation of our Crimea, and hostilities against our military conducted by the russian-backed separatist in our Donbas region.

In the past 2 years, the scale of this war has drastically expanded. The number of casualties has dramatically increased. Consequently, we have made numerous observations and gained a lot of experience regarding **tactical medicine**. At war of this magnitude things are vastly different, and these differences must be accounted for in any guidelines on tactical combat casualty care.

We are honored and humbled to share our experiences and recommendations with all of our Ukrainian colleagues and international partners. We did not come up with anything revolutionary or incredibly novel. But definitely reasonable and practical for the settings we are currently in. Sooner or later another global war will ensue, and we want all of us to learn from our lessons. Please remember that those have been paid for in ultimate sacrifice of our Ukrainian defenders and international volunteers.

Before we move on with our 10-part series of publications, we need you to understand who we are. We also need to refute one rather misguided definition.

We are the Medical Service of the 1<sup>st</sup> International Legion of Defense at the Armed Forces of Ukraine. Our legion is an infantry assault unit, and we are currently operating in one of the toughest frontline locations. Our service members going out on their combat missions are first and foremost warfighters. Our medical team of experienced doctors, nurses and medics, not only takes care of the injured, but also provides tactical medicine training and re-training to our warfighters.

#### IT'S NOT A LSCO, IT'S A WAR

It has been brought to our attention that our international military partners tend to refer to the war in Ukraine as LSCO (Large Scale Combat Operations). We disagree with this definition. It's not a LSCO, it's a war.

What happens along the **2650-km**-long Ukrainian frontline is far larger than operations. It consists of both small-scale and large-scale combat operations, plus many non-combat ones. We are achieving INTERnational strategic interests and protecting INTERnational interests. It is a **WAR**.

We need you to realize that with Finland's accession to NATO, NATO's current border with russia is **2555 km** long. History likes to repeat itself, and those who forget the history let it happen again.

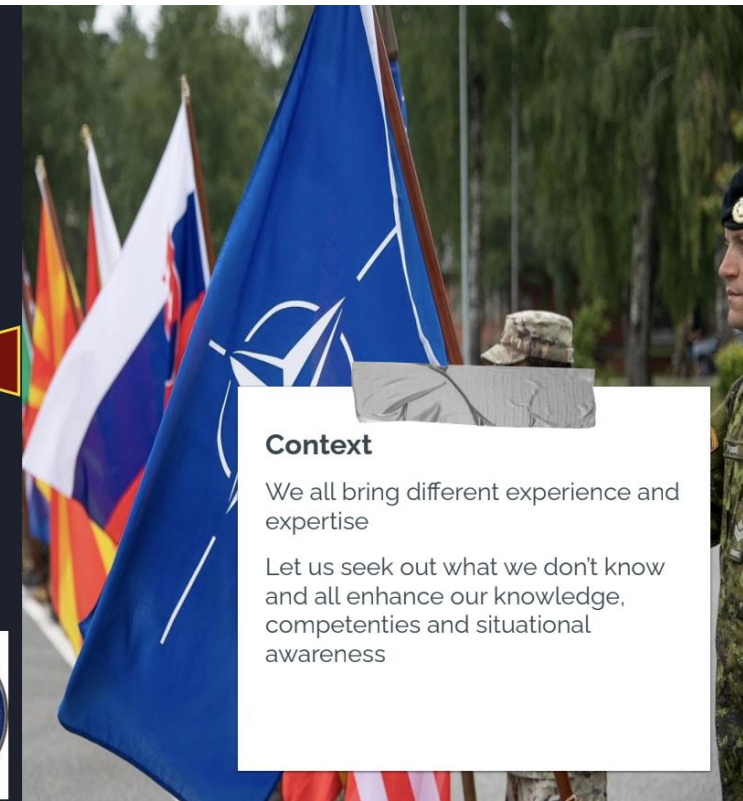
- Junior Combat Medic (JCM) role to address gaps in frontline care, equipping them with skills for difficult combat scenarios.
- Reassessing and converting tourniquets to avoid complications, emphasizing practical training for warfighters.
- PFC/PCC
- IFAK standardization and additional supplies for managing hemorrhage and hypothermia in prolonged situations.
- Training focuses on practical, scenario-based learning tailored to Ukrainian frontlines, including artillery and drone threats.

- **Lessons Shared?**
- **Workshop Series**
- Data
  - Qualitative
  - Limited quantitative
- Anecdotal
- Need for broad data capture

Welcome to the  
NATO VW24 - MilMed  
COE Workshop

The collage includes logos for:
 

- Exercise Clean Care (2024 Ramont - Hungary)
- Royal Military Academy (RMA) Brussels
- World Association for Disaster and Emergency Medicine (WDAEM) Europe
- GRM (Garrison Readiness Medical)
- NATO OTAN
- NATO Centre of Excellence for Military Medicine (Honore et Disciplina)



Vigorous Warrior Series:  
 LL → LS → LL<sub>ost</sub> 🦓

# Rapid Summary

- Several successes, more support needed (supplies to scale)
- Standardized training to scale, and enhanced engagement required
- The rate limiting step are adequate supplies, refrigeration to standard, blood warmers to scale and training
- Clinical topics not mentioned, but critical: Antimicrobial Resistance (AMR), Burns, TBI

# Questions?

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John.quinn5@nhs.net

+420608246032

<https://en.lf1.cuni.cz/contacts?sSearchText=quinn&sAction=fill#contacts>



**CBRN & MEDICAL CONFERENCE**  
17 – 18 October 2024  
PVA EXPO PRAGUE

The banner features a background image of a soldier in full CBRN protective gear. At the bottom left, there are four circular icons: a radiation symbol, a biohazard symbol, another radiation symbol, and a red cross symbol.



PARIS SOF-CMC Conference,  
Fall 2024

- Scientific program
- Hands-on Workshops
- Discussions
- Industrial exhibition

The poster features a background image of three soldiers in full combat gear. A large red cross is overlaid on the image. Text on the left side reads "Paris - FRANCE" and "October 15 - 16 2024". A small silhouette of three soldiers is in the bottom right corner.



# Burns

- Designated burn centers
- WHO Health Cluster
- Pediatrics vs adults
- Train evac

