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Tactical Combat Casualty Care (TCCC): Strengthening Pre-hospital Care

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CENTRE FOR LAND WARFARE STUDIES

Field Marshal Sam Hormusji Framji Jamshedji Manekshaw, better known as Sam “Bahadur”, was the 8th Chief of the Army Staff (COAS). It was under his command that the Indian forces achieved a spectacular victory in the Indo-Pakistan War of 1971. Starting from 1932, when he joined the first batch at the Indian Military Academy (IMA), his distinguished military career spanned over four decades and five wars, including World War II. He was the first of only two Field Marshals in the Indian Army. Sam Manekshaw’s contributions to the Indian Army are legendary. He was a soldier’s soldier and a General’s General. He was outspoken and stood by his convictions. He was immensely popular within the Services and among civilians of all ages. Boyish charm, wit and humour were other notable qualities of independent India’s best known soldier. Apart from hardcore military affairs, the Field Marshal took immense interest in strategic studies and national security issues. Owing to this unique blend of qualities, a grateful nation honoured him with the Padma Bhushan and Padma Vibhushan in 1968 and 1972 respectively.



**Field Marshal SHFJ Manekshaw, MC
1914-2008**

CLAWS Occasional Papers are dedicated to the memory of Field Marshal Sam Manekshaw

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Contents

- **Abstract7**
- **Introduction.....8**
- **Evolution of Tactical Combat Casualty Care (Global Context)10**
 - Origins of TCCC.....10
 - Core Philosophy of TCCC10
 - Adoption by the US Military.....11
 - NATO and Allied Nations.....12
- **Lessons from Recent Conflicts12**
 - 1. Iraq and Afghanistan.....12
 - 2. Ukraine (2014 onwards, intensified 2022)13
 - 3. Israel and Hybrid Warfare.....13
- **Global Recognition of TCCC13**
- **Implications for India.....14**
- **Phases of Tactical Combat Casualty Care and Core Principles14**
 - Introduction.....14
 - The Three Phases of TCCC15
 - 1. Care Under Fire (CUF).....15
 - 2. Tactical Field Care (TFC).....16
 - 3. Tactical Evacuation Care (TACEVAC).....17
 - The MARCH Algorithm.....18
- **Why Phased Care Matters.....19**
- **Indian Military Adaptations20**

• Introduction of TCCC by Hospitals in India	20
Historical Context	20
• Military Hospitals as Pioneers.....	21
92 Base Hospital, Srinagar	21
Civilian Hospitals and Trauma Centres	22
AIIMS Trauma Centre, New Delhi	22
Private Sector Hospitals	22
Training Methodologies.....	22
• Hospital-Led Research and Development.....	23
• Integration with National Initiatives	24
• Case Example: Hospital-Military Synergy	24
• Significance of Hospital-Led TCCC Introduction	25
• Summary	25
Strengthening Prehospital Care.....	25
• Operational Significance of TCCC for the Indian Armed Forces	28
Introduction.....	28
Relevance in Counter-Insurgency (CI) Operations.....	29
Nature of Threats	29
TCCC Application.....	29
Operational Example: Kashmir Valley.....	29
High-Altitude and Glacial Warfare.....	30
Operational Challenges	30
TCCC Adaptations.....	30
Operational Example: Siachen Glacier.....	31
Urban Warfare and Terrorist Incidents	31
Context.....	31

TCCC Utility	31
Operational Example: 26/11 Mumbai Attacks	31
Conventional Warfare Scenarios	32
Scale of Casualties	32
Doctrinal Impact.....	32
United Nations Peacekeeping Operations	32
Operational Environment	32
TCCC Advantage	33
Psychological and Morale Impact	33
• Case Study: Galwan Valley Clash, 2020.....	33
Summary	34
Challenges in Prehospital -Based TCCC Implementation ...	34
Introduction	34
1. Doctrinal Gaps and Lack of Standardisation.....	34
2. Shortage of Certified and Experienced Instructors	35
3. Equipment and Resource Deficiencies	35
4. Logistical and Terrain Constraints	36
5. Absence of Indigenous Data and Field Feedback	36
6. Lack of Central Oversight and Standard Curriculum	36
7. Budgetary and Institutional Limitations	37
• Conclusion.....	37
Case Example: Training Bottleneck.....	37
Summary	37
Opportunities in Prehospital TCCC Implementation	38
1. Expansion to Paramilitary and Police Forces	38
2. Integration with National Disaster Response	39

3. Seamless Civil–Military Collaboration in Field Trauma Systems	39
4. Indigenous Innovation and Make-in-India Initiatives.....	40
• Policy Recommendations and Way Forward	43
Introduction.....	43
• Conclusion.....	47
Strategic Importance.....	48
Civil–Military Integration.....	48
Challenges and Opportunities	48
The Way Forward	49
Closing Perspective	49
• References / Bibliography.....	50

Tactical Combat Casualty Care (TCCC): Strengthening Pre-hospital Care

Abstract

Modern warfare has undergone a profound transformation, characterised by asymmetric threats, hybrid conflicts, and close-quarter urban engagements. These operational settings often result in high casualty rates, many of which are preventable with timely prehospital medical intervention. Global military data, including studies from the United States and NATO campaigns, indicate that nearly 25% of combat deaths are potentially preventable – mainly due to uncontrolled haemorrhage, airway obstruction, and tension pneumothorax. Tactical Combat Casualty Care (TCCC), developed by the US military in the mid-1990s, emerged as a structured, evidence-based approach to managing trauma under hostile conditions.

Traditionally, the Indian Armed Forces have depended on conventional Advanced Trauma Life Support (ATLS) protocols. However, the nature of modern operations – including counter-insurgency missions, high-altitude warfare, and terrorism-related engagements – necessitates a shift toward combat-specific, field-adapted medical care. Recognising this, the focus has moved from hospital-based training to comprehensive prehospital TCCC training initiated at regimental training centres, corps battle schools, and unit levels. This decentralised model aims to empower first responders and combatants to deliver lifesaving care at the point of injury, ensuring immediate, effective interventions even before evacuation.

This paper explores the evolution of TCCC globally, its adaptation within the Indian Armed Forces at the regimental and unit levels, and its strategic impact on battlefield survivability. It also analyses the challenges of implementing TCCC training in diverse operational terrains and proposes recommendations for institutionalising a standardised prehospital trauma care doctrine. The analysis underscores that regimental-level TCCC training forms the critical foundation for a resilient, combat-ready force, bridging the gap between operational realities and medical capability in the field.

Introduction

The history of warfare demonstrates that survival in combat has always relied not only on tactics, weaponry, and logistics but equally on the speed and effectiveness of immediate medical intervention. From the primitive battlefield surgeries of the Napoleonic wars to the mobile surgical units of the World Wars, combat medicine has evolved alongside military strategy. Yet, despite these advances, the persistent challenge of reducing preventable deaths in combat remains unresolved.

A major paradigm shift in battlefield casualty management occurred in the late twentieth century with the development of Tactical Combat Casualty Care (TCCC) by the United States military. Unlike conventional hospital-based trauma protocols, TCCC was specifically designed for use under fire, in austere environments, and by personnel who may not be trained

medical professionals. Its focus on haemorrhage control, airway management, and rapid evacuation at the point of injury revolutionised combat survival, notably improving casualty outcomes in Iraq and Afghanistan. The proven success of TCCC led to its adoption by NATO and various other militaries, adapting the principles to their unique operational environments.

For the Indian Armed Forces, operating across diverse terrains—from high-altitude regions along the Line of Actual Control (LAC) to counter-insurgency operations in Jammu & Kashmir and the Northeast—the need for immediate, field-level casualty management is acute. Traditional ATLS-based systems, though effective in hospitals, do not cater to the challenges of delayed evacuation, limited resources, and the necessity for combatants themselves to perform lifesaving interventions under fire. Recognising this gap, a shift has emerged towards prehospital TCCC training initiated at regimental training centres, corps battle schools, and unit levels, ensuring that soldiers are trained to deliver effective care from the moment of injury.

This approach signifies a transformative shift from hospital-centric trauma education to empowering combatants as the first line of medical response. Beyond its tactical benefits, such training enhances operational readiness, builds confidence among troops, and integrates seamlessly into India's broader military preparedness framework. Moreover, it creates opportunities for synergy with paramilitary, disaster response, and civilian emergency systems, ensuring nationwide resilience against both combat and crisis scenarios.

This paper examines the global evolution and success of TCCC, its adaptation and implementation at the prehospital with focus on initiation of training at AMC Centre & College, regimental training centres and for officers at NDA, IMA and officers training academy in India. It further analyses the challenges of scaling this training model and proposes policy measures to institutionalise TCCC as a doctrinal pillar of India's military medical and operational system.

Evolution of Tactical Combat Casualty Care (Global Context)

Origins of TCCC

The Tactical Combat Casualty Care (TCCC) concept originated in the United States in the early 1990s, when studies of battlefield mortality revealed that a significant percentage of combat deaths were potentially preventable. The Vietnam War had already shown that rapid evacuation and surgical intervention reduced mortality, but it was during the Somalia operation of 1993 – popularly remembered through the *Battle of Mogadishu* – that glaring gaps in combat casualty management came to light. American forces sustained heavy casualties, and analysis indicated that many deaths were due to uncontrolled haemorrhage and airway compromise, conditions that could have been addressed with basic yet targeted interventions in the field.

Responding to these lessons, a group of US Navy physicians, led by Dr. Frank Butler, developed the principles of TCCC. The innovation lay in recognising that battlefield trauma required a protocol different from civilian emergency medicine. Conventional approaches like Advanced Trauma Life Support (ATLS) assumed safe environments, immediate availability of

surgical teams, and abundant resources – conditions absent on the battlefield. TCCC, therefore, emphasised interventions that were simple, portable, and directly relevant to combat scenarios.

Core Philosophy of TCCC

The philosophy of TCCC was built on three fundamental shifts in thinking:

- **Context-Specific Care** – Medical interventions must be tailored to the tactical situation. The safety of the rescuer

and the unit's mission always take precedence.

- **Preventable Deaths** – Focus on the three leading causes of preventable combat death: haemorrhage, airway obstruction, and tension pneumothorax.

Tiered Care – Care must evolve with the tactical situation, moving through phases: **Care Under Fire** – Basic interventions under hostile fire.

Tactical Field Care – Expanded interventions once immediate danger subsides.

Tactical Evacuation Care – More advanced care during casualty evacuation.

This shift ensured that even non-medical combatants, once trained, could deliver lifesaving interventions while under fire.

Adoption by the US Military

By the late 1990s, the US Special Operations Command had formally adopted TCCC. The protocol was rapidly integrated into pre-deployment training for Special Forces, Navy SEALs, and other frontline units. During the wars in Afghanistan and Iraq (2001–2014), TCCC principles were credited with significantly reducing preventable deaths.

A 2012 US Army study found that the case fatality rate in Afghanistan was the lowest in recorded military history – partly attributed to widespread adoption of TCCC measures such as tourniquets, haemostatic dressings, and rapid evacuation protocols. The data showed that:

- Over **87% of preventable battlefield deaths** were due to haemorrhage, most of which could be managed by tourniquet use.

- TCCC-trained personnel applied interventions that saved countless lives even before casualties reached medical facilities.

The wars provided ample battlefield validation: soldiers carrying **Individual First Aid Kits (IFAKs)** with TCCC equipment, medics trained in advanced trauma procedures, and commanders integrating medical planning into tactical operations.

NATO and Allied Nations

The success of TCCC in Iraq and Afghanistan prompted NATO and allied militaries to standardise combat casualty care. The Committee on Tactical Combat Casualty Care (CoTCCC) was established to review battlefield evidence and continuously update guidelines.

Countries such as the United Kingdom, Canada, Germany, and Australia institutionalised TCCC training for their combat troops and medical personnel. NATO exercises routinely incorporated TCCC drills, ensuring interoperability among allied forces. This not only improved survivability but also demonstrated that TCCC was adaptable across different militaries and operational theatres.

Lessons from Recent Conflicts

1. Iraq and Afghanistan

The Middle Eastern conflicts reinforced several key lessons:

- **Tourniquets Save Lives:** Once controversial, tourniquets became standard issue after data showed their effectiveness in stopping limb haemorrhage.
- **Forward Surgical Teams (FSTs):** Small, mobile surgical units closer to battlefields increased survival chances.

- **Airway and Respiratory Care:** Needle decompression and surgical cricothyroidotomy emerged as vital skills.

2. Ukraine (2014 onwards, intensified 2022)

The ongoing Russia-Ukraine conflict has further validated the importance of TCCC. With mass casualties in urban warfare and artillery-heavy engagements, Ukrainian forces have heavily relied on TCCC training, often conducted with NATO assistance. Reports suggest that widespread training of soldiers and civilians in TCCC has significantly improved survival rates. Civilian volunteers, medics, and NGOs have adopted TCCC protocols, underscoring its adaptability beyond conventional militaries.

3. Israel and Hybrid Warfare

Israel, facing hybrid threats involving terrorism and urban combat, has integrated TCCC principles into its national emergency medical system. The blending of military and civilian trauma care has provided a model for countries like India, where internal security and conventional threats coexist.

Global Recognition of TCCC

Today, TCCC is recognised as the global standard for battlefield trauma care. The **National Association of Emergency Medical Technicians (NAEMT)**, in collaboration with CoTCCC, certifies instructors and provides standardised training courses worldwide. Militaries, paramilitary organisations, and even civilian trauma centres in multiple countries have embraced TCCC as part of their training regimes.

The doctrine has transcended the battlefield. Natural disaster response teams, counter-terrorism units, and humanitarian missions increasingly use TCCC-based protocols. Its adaptability to

both war and peace settings makes it uniquely valuable in today's security environment.

Implications for India

For India, the evolution of TCCC globally offers several lessons:

- **Proven Effectiveness:** Adoption of TCCC reduces preventable deaths significantly.
- **Interoperability:** With India's growing participation in UN peacekeeping operations, TCCC ensures alignment with global medical standards.
- **Civil-Military Fusion:** Experiences from Israel and Ukraine show that TCCC can be effectively integrated into civilian hospital systems, a model relevant to India's counter-terrorism and disaster response needs.

The next logical step for India was to adapt and institutionalise TCCC in its own operational context, which has now commenced with its structured introduction and implementation at initiation of training at AMC Centre & College, regimental training centres and for officers at NDA, IMA and officers training academy, at corps battle schools, and unit levels – a process explored in the following section

Phases of Tactical Combat Casualty Care and Core Principles

Introduction

Tactical Combat Casualty Care (TCCC) is not merely a set of clinical guidelines; it is a doctrine that aligns medical intervention with tactical realities. Unlike civilian trauma systems, where resources are abundant and evacuation is rapid, the battlefield imposes constraints of time, space, and safety. TCCC addresses this

challenge by dividing care into **three phases**, each corresponding to the tactical situation at hand. Within these phases, interventions are guided by the **MARCH algorithm**, a structured prioritisation framework designed to tackle the leading causes of preventable battlefield death.

The Three Phases of TCCC

1. Care Under Fire (CUF)

- **Definition:** Medical care rendered while the casualty and rescuer are under effective hostile fire.
- **Primary Goal:** Maintain combat effectiveness while preventing immediate casualty deterioration.

Characteristics: The tactical situation dictates actions.

The rescuer's priority is return fire and seek cover.

Medical interventions are minimal, focusing only on lifesaving measures that do not compromise the mission.

Key Interventions:

- Direct the casualty to remain engaged in the fight if possible.
- Instruct self-aid or buddy aid.
- Apply tourniquet high and tight on the limb to control life-threatening haemorrhage.
- Move the casualty to cover when tactically feasible.

Indian Context Example: In counter-insurgency operations in Jammu & Kashmir, applying a tourniquet during ambush or firefight has proven critical before evacuation to cover can occur. 92 Base

Hospital (BH) data reflects that early limb haemorrhage control significantly improves survival until definitive care is reached.

2. Tactical Field Care (TFC)

- **Definition:** Care provided once effective hostile fire has ceased or the casualty and rescuer are in relative safety.
- **Primary Goal:** Stabilise the casualty while preparing for evacuation.

Characteristics: Expanded range of interventions possible.

Greater access to medical equipment.

Time available to assess and prioritise casualties.

Key Interventions (following MARCH):

- **M - Massive Haemorrhage:** Apply tourniquets, haemostatic dressings, and pressure bandages.
- **A - Airway:** Insert nasopharyngeal airway or perform surgical cricothyroidotomy if needed.
- **R - Respiration:** Decompress suspected tension pneumothorax with needle thoracostomy; apply occlusive dressings for open chest wounds.
- **C - Circulation:** Establish intravenous (IV) or intraosseous (IO) access; administer tranexamic acid (TXA) and fluids.
- **H - Hypothermia/Head Injury:** Prevent hypothermia with blankets; monitor and manage traumatic brain injury.

Additional Measures:

- Reassess interventions.
- Administer pain management (oral or injectable analgesics).
- Begin antibiotics for penetrating wounds.
- Document casualty care for handover.

Indian Context Example: In high-altitude areas like Ladakh, hypothermia is a significant complicating factor. Hospital-based TCCC courses now emphasise hypothermia prevention using improvised warming techniques, since hypothermia worsens coagulopathy and shock.

It is pertinent to note that hypothermia is a significant issue not only in Ladakh but also in the entire Kashmir valley including Srinagar, where most operations occur at altitudes above 7,000–8,000 feet. Preventive measures are critical in such conditions.

3. Tactical Evacuation Care (TACEVAC)

- **Definition:** Care delivered during evacuation to higher echelons of medical treatment, which may involve ground or air assets.
- **Primary Goal:** Continue stabilisation, initiate advanced procedures, and transport casualties efficiently to definitive surgical care.

Characteristics: Care may be delivered by dedicated medical personnel (medics, doctors, nurses).

Access to more advanced equipment, including monitoring and ventilatory support.

Time and resources are relatively more available.

Key Interventions:

- Reassess all prior interventions from MARCH.
- Provide advanced airway management, including intubation.
- Initiate fluid resuscitation guided by damage-control resuscitation principles (permissive hypotension, use of blood products if available).
- Administer additional pain relief and antibiotics.
- Monitor vital signs and document interventions for seamless handover.

Indian Context Example: During casualty evacuation in Siachen Glacier, where helicopter evacuation may be delayed due to weather, Tactical Evacuation Care becomes critical. Hospitals have trained medical evacuation teams in prolonged field care principles, incorporating TCCC protocols into extended evacuation scenarios so that adequate field care can be provided at pre-hospital level

The MARCH Algorithm

The **MARCH algorithm** provides a structured approach to casualty assessment and management:

M - Massive Haemorrhage:

- Uncontrolled bleeding is the leading cause of preventable battlefield death.
- Immediate tourniquet use, haemostatic gauze, and junctional haemorrhage control are emphasised.

A - Airway:

- Simple airway adjuncts such as nasopharyngeal airways.
- Definitive measures (surgical airway) if obstruction persists.

R - Respiration:

- Recognition and decompression of tension pneumothorax.
- Occlusive dressings for open chest wounds.

C - Circulation:

- Rapid IV/IO access.
- Fluid resuscitation prioritises blood products and TXA over crystalloids.

H - Hypothermia/Head Injury:

- Prevention of heat loss.
- Attention to traumatic brain injury (e.g., maintain oxygenation, prevent hypotension).

This structured assessment ensures that the most immediate life threats are managed in sequence, maximising survival until definitive care is available.

Why Phased Care Matters

The phased approach of TCCC recognises that **tactics drive medical care**. For example:

- Attempting advanced airway management under fire may

endanger both casualty and rescuer.

- Conversely, delaying airway intervention once under cover could cost lives.

By linking medical priorities to tactical realities, TCCC ensures that both mission accomplishment and casualty survival are balanced.

Indian Military Adaptations

Indian hospitals introducing TCCC have contextualised these phases to suit local realities:

- **Care Under Fire training** now incorporates counter-insurgency ambush scenarios.
- **Tactical Field Care modules** focus on prolonged evacuation in remote areas (e.g., Northeast jungles, high-altitude regions).
- **TACEVAC training** integrates with the Indian Army's established Casualty Evacuation (Cas Evac) doctrine, ensuring smooth transition from field to hospital.

Such adaptations demonstrate how TCCC can be both globally standardised and locally relevant.

Introduction of TCCC by Hospitals in India

Historical Context

For decades, trauma care training in the Indian Armed Forces – both military and civilian – was primarily guided by Advanced Trauma Life Support (ATLS) and conventional emergency medicine protocols. While effective in controlled environments, ATLS assumes access to advanced equipment, multiple

responders, and secure conditions—factors rarely present in combat or field operations.

With the increasing tempo of counter-insurgency (CI) operations in Jammu & Kashmir and the Northeast, prolonged high-altitude deployments along the LAC, and counter-terrorist missions in urban terrain, the inadequacy of conventional trauma systems in real battlefield conditions became evident. Delayed evacuations, hostile surroundings, and limited resources underscored the need for a combat-specific, field-adapted casualty care framework.

This realisation initiated a progressive yet decisive transition: prehospital TCCC training needs to be emphasised from the regimental training centres, corps battle schools, and unit levels, ensuring that soldiers and first responders receive hands-on exposure to lifesaving skills at the point of injury—well before reaching any hospital setting.

Military Hospitals as Pioneers

92 Base Hospital, Srinagar

92 Base Hospital became the first premier institution to formally introduce TCCC modules within its trauma training curriculum at the Core Battle School in Srinagar.

- Simulation-based training was introduced, with practical hands-on sessions using mannequins and live battlefield scenarios.
- Courses covered haemorrhage control, airway management, and tactical evacuation aligned with standard TCCC guidelines.
- Regular TCCC workshops were conducted for medical

officers, nursing staff, and combat medics; however, there remains a vital need to integrate TCCC training into routine regimental training centre programs and unit-level exercises to ensure wider and sustained implementation.

Civilian Hospitals and Trauma Centres

AIIMS Trauma Centre, New Delhi

- India's apex trauma care institute has conducted **joint workshops with Armed Forces Medical Services** on combat trauma care.
- AIIMS introduced **modified TCCC training** for emergency medicine residents, incorporating lessons from mass-casualty and terrorism incidents (e.g., Delhi serial blasts, 2008 Mumbai attacks).
- Civil-military collaboration has expanded through conferences, research, and joint publications.

Private Sector Hospitals

- Some leading private hospitals (Apollo, Fortis) have adopted elements of TCCC for **corporate security and disaster response teams**.
- Partnerships with NAEMT (National Association of Emergency Medical Technicians) have allowed TCCC-certified courses to be conducted in India, often hosted by civilian institutions with participation from military personnel.

Training Methodologies

Hospitals have adopted a multi-modal training approach to institutionalise TCCC:

1. Simulation-Based Learning

- High-fidelity mannequins replicating breathing, bleeding, and airway obstruction.
- Virtual reality (VR) and augmented reality (AR) battlefield simulations for immersive training.

2. Skill Stations

- Hands-on practice of tourniquet application, haemostatic dressing, and airway adjuncts.
- “Stop the Bleed”-style modules for non-medical personnel.

3. Scenario-Based Drills

- Replicating ambush, IED blast, and high-altitude evacuation scenarios.
- Casualties role-played by volunteers with moulage to simulate stress and realism.

4. Interdisciplinary Training

- Involvement of surgeons, anaesthesiologists, emergency physicians, and nursing staff.
- Cross-training ensures that all members of the medical chain are TCCC-literate.

Hospital-Led Research and Development

Hospitals have also become **research hubs** for TCCC in India:

- Data Collection: 92 Base Hospital (BH) is working on collating data based on TCCC trainees in combat zones

along with CAPF , which will be essential to refine TCCC teaching.

- **Indigenous Solutions:** Research into low-cost haemostatic dressings, portable warming blankets, and ruggedised monitoring equipment tailored for Indian conditions.
- **Doctrine Development:** Hospitals have provided inputs for the Indian Army's casualty evacuation policy, ensuring that TCCC principles are reflected in operational planning.

Integration with National Initiatives

Hospitals introducing TCCC have aligned their efforts with national-level initiatives:

- **National Disaster Response Force (NDRF):** Hospital-led training has been extended to disaster responders, particularly for earthquake and blast scenarios.
- **Police and Paramilitary Forces:** CRPF and BSF medics have undergone hospital-conducted TCCC training, enabling them to deliver combat casualty care in counter-terrorism environments.
- **Public Awareness:** "Stop the Bleed" campaigns run by civilian hospitals spread TCCC-inspired haemorrhage control knowledge to laypersons.

Case Example: Hospital-Military Synergy

In 2022, a joint exercise between Command Hospital (Northern Command) and AIIMS Trauma Centre simulated a large-scale terrorist attack scenario with over 100 mock casualties. The drill combined TCCC principles (tourniquet use, airway management, tactical triage) with hospital surge capacity protocols. The exercise demonstrated that hospital-led TCCC training could seamlessly

integrate military and civilian responses, ensuring effective casualty management from battlefield to tertiary care.

Significance of Hospital-Led TCCC Introduction

- **Academic Rigor:** Hospitals provide structured teaching, assessment, and certification.
- **Standardisation:** Ensures uniform adoption of TCCC protocols across the Armed Forces.
- **Civil-Military Fusion:** Bridges the gap between battlefield exigencies and civilian trauma systems.
- **Scalability:** Hospitals act as hubs from which TCCC knowledge spreads to field units, paramilitary forces, and disaster response agencies.

Summary

The introduction of TCCC by hospitals in India represents a landmark in combat medicine. By combining clinical expertise, academic methodology, and operational relevance, hospitals have transformed TCCC from an ad-hoc battlefield measure into a structured and sustainable doctrine. This integration strengthens not only the survivability of soldiers but also the resilience of India's broader emergency response systems; however, there remains a pressing need to extend TCCC training into initiation of training at AMC Centre & College, regimental training centres and for officers at NDA, IMA and officers training academy, core battle schools and at unit level to ensure comprehensive and enduring field preparedness.

Strengthening Prehospital Care

To strengthen the implementation of Tactical Combat Casualty Care (TCCC) across diverse operational settings, the Yodha

Rakshak Bachaav Kit (YRBK) has been conceptualised and indigenously developed under the guidance of the higher medical echelons of the Indian Armed Forces, under the aegis of the Director General Armed Forces Medical Services (DGAFMS) and same has been deployed in combat zone of 15 corps. This initiative represents a transformative step toward standardizing and strengthening prehospital battlefield care.

The YRBK aims to comprehensively address the major causes of preventable battlefield deaths—massive hemorrhage, airway obstruction, and tension pneumothorax—while ensuring ease of use by combatants in hostile and austere settings. The kit integrates the MARCH algorithm (Massive Hemorrhage, Airway, Respiration, Circulation, Hypothermia) and conforms with the updated 2024 TCCC and PHTLS protocols. It is supported by bilingual instruction manuals and QR-based training materials for rapid field reference.

The standardized contents of the YRBK, designed after extensive field evaluation, are listed below:

- Chest Seal Dressing with Valve - For managing open or tension pneumothorax.
- Gauze Swab Pack - Sterile 3×3 inch swabs for wound cleaning and dressing.
- Nasopharyngeal Airway - 115–135 mm, 28–36 Fr for airway patency maintenance.
- Tourniquet (Military Standard) - Lightweight, one-handed application with windlass mechanism.
- Combat Compression Bandage - Elastic bandage with wound pad and Velcro for limb bleeding control.

- Pill Pack Container – Compact polyethylene container for 4–6 essential tablets.
- Survival Blanket – Reflective lightweight blanket to prevent hypothermia.
- Documentation Card – Waterproof card for injury, vitals, and treatment record-keeping.
- Permanent Marker – For time marking on tourniquets and documentation cards.
- Trauma Shears – 7.5-inch blunt-tipped shears for safe cutting of clothing and gear.
- Instruction Manual – Bilingual waterproof manual with visual and QR-coded procedural guidance.
- Medical Kit Carrying Bag – Rugged, MOLLE-compatible, water-resistant tactical pouch with clear labelling.
- Universal Tourniquet Pouch – One-handed access pouch for quick tourniquet deployment.

A structured feedback and evaluation mechanism accompanies YRBK deployment to capture user experiences from real field scenarios. The form records data on training quality, ease of use, and kit ergonomics. It includes:

- Evaluation of training clarity and adequacy of hands-on practice.
- Self-rated user confidence in performing interventions like tourniquet use, NPA insertion, wound packing, and hypothermia management.

- Assessment of practicality, accessibility, and organization of kit components.
- Open-ended suggestions for kit improvement and training refinement.

Its usage will enable gathering of statistics data to be analysed for enhance future versions of the YRBK and associated training modules. Early field feedback has shown encouraging results, with a measurable improvement in response time and intervention confidence among trained personnel.

Operational Significance of TCCC for the Indian Armed Forces

Introduction

The Armed Forces of India operate in some of the world's most diverse and challenging environments—ranging from counter-insurgency operations in the dense jungles of the Northeast, counter-terrorist actions in urban Kashmir, and high-altitude warfare on the icy heights of Ladakh and Siachen Glacier, to large-scale conventional deployments along the western borders. These operational contexts generate unique casualty care challenges: prolonged evacuation times, extreme weather conditions, limited resources, and hostile tactical environments.

In such scenarios, Tactical Combat Casualty Care (TCCC) becomes more than a medical protocol; it is a force multiplier. Its structured approach reduces preventable deaths, improves morale, and ensures that combat units remain operationally effective despite casualties. While the hospital-led institutionalisation of TCCC has provided the Armed Forces with a doctrine tailored for operational realities, there remains a crucial need to incorporate

TCCC training into routine regimental training centre programs and unit-level exercises to achieve full integration across all echelon

Relevance in Counter-Insurgency (CI) Operations

Nature of Threats

- Small arms fire, ambushes, and Improvised Explosive Devices (IEDs) dominate casualty patterns in CI environments.
- Casualties often occur in remote villages, dense forests, or mountainous terrain where evacuation is delayed.

TCCC Application

- **Care Under Fire:** Tourniquet application and buddy-aid for bleeding control during firefights.
- **Tactical Field Care:** Managing blast injuries, airway compromise, and shrapnel wounds once fire subsides.
- **TACEVAC:** Evacuation by road, often hindered by terrain and hostile activity, necessitating prolonged field care.

Operational Example: Kashmir Valley

Following success stories highlight the impact of pre-hospital TCCC interventions in the Valley:

a) Tourniquet Application: A soldier sustained a vascular injury to his right upper limb after a fall from a tree. Immediate application of a tourniquet from the the first aid kit developed by 92 BH based on TCCC principles stabilised his condition, controlling the bleeding and maintaining hemodynamic stability. This swift action allowed him to be safely transported for further medical care, ultimately saving his life and limb.

b) Needle Decompression: A soldier suffered multiple gunshot wounds to the right chest wall, resulting in hemodynamic instability with falling SpO₂ levels (68%). In a pre-hospital setting, needle decompression was performed in the 2nd intercostal space using the needle from the the first aid kit developed by 92 BH based on TCCC principles. This intervention stabilised his hemodynamics, decreased his oxygen requirement, prevented further deterioration, and saved his life.

In 2019, during a counter-terrorist operation in Pulwama, a soldier sustained a gunshot wound to the femoral artery. Immediate application of a tourniquet by a buddy—trained through a hospital-led TCCC workshop—stopped the haemorrhage, buying precious time until evacuation. Such cases underscore TCCC's lifesaving role in CI operations.

High-Altitude and Glacial Warfare

Operational Challenges

- Extreme cold, hypoxia, and rugged terrain complicate casualty management.
- Evacuation is often delayed due to weather grounding helicopters.
- Hypothermia and frostbite compound trauma outcomes.

TCCC Adaptations

- Emphasis on **hypothermia prevention** within the “H” of MARCH.
- Training soldiers in improvised insulation methods (e.g., using rucksacks, sleeping bags).

- Needle decompression skills taught at hospital-based TCCC courses are critical in high-altitude blast and avalanche scenarios.

Operational Example: Siachen Glacier

In 2021, after an avalanche buried a patrol, survivors applied TCCC principles to manage hypothermia and limb crush injuries until evacuation was possible. Hospital-trained medics led prolonged field care for nearly six hours, demonstrating TCCC's adaptability to high-altitude warfare.

Urban Warfare and Terrorist Incidents

Context

Urban combat, hostage rescue, and terrorist incidents often involve multiple casualties, confined spaces, and civilian presence. Injuries are typically from small arms, IEDs, and structural collapses.

TCCC Utility

- **Rapid triage** based on TCCC principles allows prioritisation of casualties.
- Training in haemorrhage control, airway management, and chest decompression is vital in high-casualty urban incidents.
- Civilian trauma hospitals (AIIMS, Safdarjung) collaborating with military hospitals have integrated TCCC drills into mass-casualty simulations.

Operational Example: 26/11 Mumbai Attacks

Although predating India's formal adoption of TCCC, retrospective analysis showed that several deaths from limb

haemorrhage could have been prevented with early tourniquet use. Since then, TCCC-inspired haemorrhage control has been prioritised in urban counter-terrorist training, with hospitals providing refresher courses to NSG and MARCOS units.

Conventional Warfare Scenarios

Scale of Casualties

Large-scale conventional engagements along the western and northern borders could generate high casualty volumes within short durations. Ensuring survivability under such conditions requires standardised, scalable trauma protocols like TCCC.

Doctrinal Impact

- Hospitals have trained medical officers and combat medics in **mass-casualty triage** using TCCC frameworks.
- Integration with **Casualty Evacuation (Cas Evac) doctrine** ensures seamless handover from battlefield to tertiary hospitals.
- Exercises such as *Sudershan Shakti* and *Vijay Prahar* have included medical components modelled on TCCC, validating its role in conventional scenarios.

United Nations Peacekeeping Operations

Operational Environment

India is one of the largest troop contributors to UN peacekeeping missions in Africa and the Middle East, where Indian soldiers face asymmetric threats such as IEDs and ambushes.

TCCC Advantage

- Standardised TCCC training aligns Indian troops with NATO and allied medical protocols.
- Ensures interoperability during multinational missions.
- Hospital-based TCCC certifications (through NAEMT collaboration) enhance credibility and preparedness of Indian contingents.

Psychological and Morale Impact

TCCC also has intangible benefits:

- **Morale Boost:** Soldiers gain confidence knowing that their comrades are trained in lifesaving interventions.
- **Unit Cohesion:** Buddy-aid training fosters trust within units.
- **Combat Effectiveness:** Reduced preventable deaths ensure more soldiers return to duty, sustaining combat strength.

Case Study: Galwan Valley Clash, 2020

During the clash in Galwan Valley, several soldiers sustained severe blunt trauma injuries in high-altitude conditions. Although medical evacuation was delayed due to terrain and weather, the application of basic TCCC measures—haemorrhage control, airway positioning, and hypothermia prevention—enabled survival until evacuation. The incident underscored the importance of having TCCC-trained personnel embedded within units deployed in extreme environments.

Summary

The operational significance of TCCC for the Indian Armed Forces cannot be overstated. From counter-insurgency in Kashmir to high-altitude warfare in Siachen, and from urban counter-terrorist operations to large-scale conventional battles, TCCC enhances survivability and operational readiness. While institutionalising TCCC through hospitals has aligned India's combat medical doctrine with global best practices and local operational realities, there remains a vital need to integrate TCCC training into routine regimental training centre curricula and unit-level programs to ensure widespread and sustained battlefield proficiency.

Challenges in Prehospital -Based TCCC Implementation

Introduction

While the expansion of Tactical Combat Casualty Care (TCCC) training to the prehospital environment marks a critical evolution in India's combat medical capability, its implementation at the regimental, unit, and corps battle school levels presents a unique set of challenges. These range from doctrinal inconsistencies and logistical constraints to gaps in infrastructure, instructor availability, and policy oversight. Addressing these is essential to embed TCCC as an operational culture rather than an occasional training event.

1. Doctrinal Gaps and Lack of Standardisation

ATLS vs TCCC

- Many unit medical officers and instructors remain more familiar with ATLS principles, designed for hospitals, rather than TCCC, which is field-oriented and resource-limited.

- TCCC's "tourniquet-first" and "treat under fire" concepts often conflict with conventional training mindsets.
- The absence of a standardised prehospital TCCC doctrine across formations results in inconsistent teaching and execution.

2. Shortage of Certified and Experienced Instructors

- There is a severe shortage of certified TCCC trainers at regimental and unit levels.
- Frequent postings disrupt continuity, with trained personnel leaving before institutional capability matures within a formation.

3. Equipment and Resource Deficiencies

Combat Medical Supplies

- Units often lack adequate quantities of approved combat tourniquets, haemostatic dressings, and chest seals.
- Field improvisations are common, but they compromise standardisation and training quality.

Training Aids

- Regimental centres frequently lack realistic simulation aids or mannequins for hands-on practice.
- Without practical exposure, training remains theoretical, reducing retention and confidence under stress.

4. Logistical and Terrain Constraints

- Field conditions in high-altitude, jungle, and desert areas limit regular conduct of TCCC drills.
- Unpredictable weather, limited training spaces, and lack of medical stores pose recurring challenges.
- Remote units often operate without proximity to higher medical facilities, complicating live training scenarios.

5. Absence of Indigenous Data and Field Feedback

- Most TCCC guidelines are adapted from Western combat experiences in Iraq and Afghanistan.
- Limited Indian field data from Kashmir, Siachen, and counter-insurgency zones prevents context-specific refinements.
- No structured combat casualty registry exists to record and analyse prehospital interventions and outcomes.

6. Lack of Central Oversight and Standard Curriculum

- Currently, no single nodal agency governs TCCC training at the prehospital level in India.
- Each formation or corps battle school conducts training independently, leading to wide variation in quality and content.
- Unlike the US CoTCCC, India lacks a central committee to standardise updates, assessments, and certification pathways.

7. Budgetary and Institutional Limitations

- No dedicated budget is earmarked for prehospital TCCC equipment or training aids at regimental centres.
- Dependence on unit funds or ad-hoc procurement leads to inconsistent resourcing.
- Sustained institutionalisation of TCCC requires formal inclusion in annual training budgets and policy directives.

Conclusion

While India has taken a crucial step by expanding TCCC to the prehospital domain, significant doctrinal, logistical, and cultural challenges remain. Overcoming these will require central policy support, creation of a national TCCC training framework, and inclusion of structured TCCC drills into routine regimental and unit training schedules, ensuring every combatant is a capable first responder on the battlefield. Addressing these challenges is vital if India is to create a sustainable, nationally integrated combat trauma system.

Case Example: Training Bottleneck

In 2024 & 2025, 92 Base Hospital (BH) trained sufficient members operating in TCCC at Srinagar. This institutionalises the need at larger fmns. Make instructor and student courses and certify all troops at AMC Centre & College, regimental training centres, officers training academies, core battle schools and at unit level before operational deployment.

Summary

While India has taken a crucial step by expanding TCCC to the prehospital domain, significant doctrinal, logistical, and cultural

challenges remain. Overcoming these will require central policy support, creation of a national TCCC training framework, and inclusion of structured TCCC drills into routine regimental and unit training schedules, ensuring every combatant is a capable first responder on the battlefield. Addressing these challenges is vital if India is to create a sustainable, nationally integrated combat trauma system.

Opportunities in Prehospital TCCC Implementation

Introduction Every challenge in institutionalising TCCC at the prehospital level also presents an opportunity. The gradual expansion of Tactical Combat Casualty Care (TCCC) training from hospitals to regimental training centres, corps battle schools, and unit levels has opened new avenues for operational readiness, troop survivability, indigenous capability development, and national resilience. If effectively harnessed, prehospital TCCC can evolve beyond the Armed Forces into a comprehensive national framework for frontline trauma response, strengthening both military preparedness and civilian emergency systems.

1. Expansion to Paramilitary and Police Forces

Why Important

- India's Central Armed Police Forces (CAPFs) – CRPF, BSF, ITBP, CISF, SSB – operate in CI/CT environments nearly identical to military operations.
- Casualty profiles from Naxal-affected zones, J&K, and the Northeast mirror battlefield trauma. **Opportunities**
- Regimental training centres and corps battle schools can serve as hubs to train CAPF and state police special units such as Greyhounds, STF, and GARUD.

- Embedding TCCC-trained medics at the platoon level can significantly reduce preventable deaths during counter-terror and Naxal operations.

Case Example : The CRPF has recently partnered with **92 Base Hospital, Srinagar**, for TCCC-based prehospital training to field medics and combat troops, aiming to improve survival rates after IED and gunfire injuries in Chhattisgarh and J&K.

2. Integration with National Disaster Response

Context

India's high disaster vulnerability – earthquakes, landslides, floods, and industrial incidents – creates a constant need for mass-casualty readiness.

TCCC Relevance

- TCCC principles like bleeding control, airway protection, and hypothermia prevention directly apply to disaster rescue operations.
- Training NDRF and SDRF teams in prehospital TCCC modules can enhance casualty survival in chaotic, resource-poor environments.

Implication

A **dual-use doctrine**, where combat-oriented TCCC simultaneously strengthens civilian disaster resilience and complements Armed Forces preparedness.

3. Seamless Civil-Military Collaboration in Field Trauma Systems

- Prehospital TCCC fosters practical collaboration between Armed Forces, CAPFs, and civilian trauma networks.

- Regular joint drills and knowledge sharing can align military evacuation SOPs with civilian emergency protocols.
- This synergy ensures smooth interoperability during large-scale disasters or national emergencies.

4. Indigenous Innovation and Make-in-India Initiatives

Problem

Field medical gear – tourniquets, haemostatic dressings, airway kits – is still mostly imported.

Opportunity

- Prehospital deployment data can guide DRDO, IITs, and private start-ups to develop low-cost, durable, indigenous equipment.
- Regimental training centres can act as real-world testing grounds for field-ready medical technologies.
- These innovations can be exported to friendly militaries and UN missions.

Examples

- DRDO projects on chitosan-based haemostatic dressings.
- IIT collaborations developing compact hypothermia prevention kits for high-altitude troops.

5. Establishing a National Field Trauma Registry

- Units and regimental centres can systematically record and analyse field casualty data from CI ops, LAC, and Siachen.
- A centralised **Combat Trauma Registry** anchored in AFMS will:
 - o Capture injury patterns unique to Indian operations.
 - o Track outcomes of TCCC interventions.
 - o Refine prehospital training protocols.
- This will position India alongside global systems like the **US Joint Trauma System (JTS)**.

6. Training Multipliers and Scalable Models

- “Train the Trainer” programmes at dedicated hospitals can produce certified instructors to cascade TCCC knowledge across formations.
- E-learning tools and mobile micro-courses can keep troops updated even in remote posts.
- Integrating TCCC modules into **unit refresher schedules and core battle school curricula** ensures sustainability.

7. International Cooperation and Military Diplomacy

- India’s prehospital TCCC capabilities can enhance its reputation in **UN peacekeeping operations**.
- Offering TCCC training to partner nations across South Asia and Africa can strengthen defence ties and humanitarian collaboration.

- Regimental TCCC centres can become **regional hubs** for tactical medical training under the “Neighbourhood First” policy.

8. Enhancing Psychological Preparedness and Confidence

- Prehospital TCCC training empowers soldiers to act decisively during combat trauma, improving confidence and unit cohesion.
- Exposure to realistic simulations builds mental resilience and reduces psychological helplessness during casualty incidents.
- Incorporating stress management and resilience-building modules during training strengthens both mental and operational endurance.

9. Policy-Level Opportunities and Institutionalisation

- TCCC should be officially included in all regimental, corps, and unit-level annual training plans.

Summary

Prehospital TCCC is more than a tactical medical framework – it is a strategic enabler for India’s defence and national resilience. By embedding it within regimental and unit-level training, India strengthens its frontline response, reduces preventable deaths, promotes indigenous innovation, and enhances interoperability across security forces. The opportunities are multidimensional – **operational, institutional, psychological, technological, and diplomatic** – ensuring India transitions from a TCCC follower to a **global leader in prehospital combat casualty care**.

Every challenge in institutionalising TCCC also presents an opportunity. The gradual adoption of Tactical Combat Casualty

Care (TCCC) by Indian hospitals has opened new avenues for **operational readiness, civil-military synergy, indigenous innovation, and global credibility**. If harnessed effectively, hospital-based TCCC can evolve beyond the Armed Forces into a **national trauma preparedness framework**, influencing healthcare, security, and diplomacy.

Policy Recommendations and Way Forward

Introduction

The expansion of Tactical Combat Casualty Care (TCCC) training into the prehospital domain marks a defining step toward modernising India's frontline medical readiness. However, for it to achieve full effectiveness, robust policy interventions, institutional frameworks, and doctrinal integration are imperative. The following recommendations outline a structured roadmap for the Armed Forces, paramilitary units, and policymakers to embed **prehospital TCCC** as a national standard in trauma response, beginning at regimental training centres and extending to unit-level operations.

1. Establish Centres of Excellence for Prehospital TCCC

- Designate AFMC Pune, Command Hospitals in each operational theatre, and **92 Base Hospital (Srinagar)** as nodal Centres of Excellence for **prehospital TCCC training**.
- Responsibilities:
 - o Standardise regimental-level training curriculum and certification.
 - o Conduct instructor courses for medics
 - o Serve as regional hubs for research, field simulation, and validation.

- Modelled on the US Committee on TCCC (CoTCCC), these centres should form an **Indian Committee on TCCC (ICoTCCC)**

2. Integration into Military Education and Regimental Training

Military Education

- Include TCCC modules in AFMC, AMC Centre & College
- Introduce compulsory **prehospital TCCC certification** for all soldiers before deployment to CI/CT or high-altitude areas. **Field Training**
- Embed TCCC into annual regimental, corps battle school, and unit-level exercises.
- Ensure each combatant completes at least one simulation-based TCCC drill per quarter.

3. Train-the-Trainer Model for Field Implementation

- Adopt a three-tier system:
 - o Tier 1: Core instructors at Centres of Excellence.
 - o Tier 2: Regional instructors at Command Hospitals & 92 Base Hospital.
 - o Tier 3: Unit-level trainers
- Recognise certified instructors

4. Indigenous Equipment and Field Simulation Tools

- Collaborate with **DRDO, IITs, and start-ups** to develop cost-effective combat kits:

- o Field-tested tourniquets, haemostatic dressings, rugged airway tools.
- o Portable hypothermia prevention kits for high-altitude areas.
- o Compact, low-cost mannequins for unit-level simulation.
- Regimental centres should serve as **testing and evaluation sites** for indigenously developed medical technologies.

5. National Prehospital Combat Trauma Registry

- Anchor a **Combat Trauma Registry** at AFMC Pune with inputs from all formations and regimental centres.
- Collect data from CI/CT, LAC, and high-altitude deployments.
- Functions :
 - o Analyse preventable deaths.
 - o Evaluate prehospital interventions.
 - o Update TCCC training doctrine based on Indian field experience.

6. Strengthen Civil-Military and Paramilitary Synergy

- Institutionalise joint training among Armed Forces, CAPFs, NDRF, and SDRF.
- Conduct combined casualty evacuation and TCCC drills in simulated field conditions.

7 Leverage Technology and Digital Learning Platforms

- Develop mobile learning apps featuring realistic field scenarios and interactive modules for soldiers in remote areas.
- Deploy **VR/AR-based battlefield simulations** for stress exposure and casualty management drills.
- Enable **tele-mentoring** networks linking regimental medics to tertiary specialists in real time.

8. Psychological Resilience and Stress Conditioning

- Integrate stress inoculation drills into prehospital TCCC exercises.
- Provide access to embedded counsellors or psychologists during intensive simulations.
- Promote resilience-building programs to prepare soldiers for high-stress casualty environments.

9. Policy and Budgetary Support

- The **Ministry of Defence** must allocate dedicated funds for prehospital TCCC kits, equipment, and training aids.
- The **Ministry of Home Affairs** should extend TCCC training standards to CAPFs and police forces.
- Recognise prehospital TCCC as a key component of national defence and internal security preparedness.

10. International Collaboration and Defence Diplomacy

- Develop exchange programmes with NATO, UN, and partner militaries to share best practices.
- Position India as a **regional hub for prehospital combat casualty**

training, leveraging both strategic and humanitarian influence.

Case Example: A Scalable Prehospital Model

Imagine a soldier deployed in Kupwara: •

He receives a TCCC refresher course from a trainer certified at **92 Base Hospital or Command Hospital Udhampur**.

- His field kit—tourniquet, haemostatic gauze, airway adjunct—is **indigenously developed** and validated.
- After a real casualty event, his intervention data is logged into the Combat Trauma Registry, analysed at AFMC, and lessons refined into new regimental training modules.
- This continuous learning cycle ensures **TCCC remains a living, evolving field doctrine**.

Summary

The way forward for prehospital TCCC in India lies in institutionalisation, indigenisation, and integration. By building centres of excellence, embedding TCCC into regimental training, fostering indigenous production, developing a trauma registry, and promoting civil-military cooperation, India can transform prehospital casualty care into a strategic capability. With sustained policy and financial commitment, India can dramatically reduce preventable battlefield deaths and position itself as a **global leader in prehospital combat trauma systems**.

Conclusion

The journey of Tactical Combat Casualty Care (TCCC) in India—particularly through its prehospital adaptation at regimental and unit levels—marks a decisive evolution in combat

medicine. From its roots in US Special Operations to its adoption across Indian formations, TCCC has proven itself as a life-saving doctrine that preserves combat effectiveness, boosts morale, and strengthens national resilience.

Strategic Importance

For the Indian Armed Forces, prehospital TCCC is not just a medical protocol but a **force multiplier**. Whether in counter-insurgency operations in Kashmir, high-altitude missions in Siachen, or large-scale conventional warfare, the ability to deliver care at the point of injury determines survival. Training every soldier and medic in TCCC ensures immediate, skilled intervention—bridging the critical minutes before evacuation. By preventing deaths from haemorrhage, airway compromise, and hypothermia, prehospital TCCC directly enhances operational endurance, strengthens morale, and reaffirms the national commitment to protect every soldier's life.

Civil-Military Integration

Prehospital TCCC also bridges India's wider trauma ecosystem. By integrating regimental-level training with CAPFs, NDRF, and civilian emergency responders, the Armed Forces must create a **unified trauma response doctrine**. This cross-sector synergy ensures preparedness for both military and civilian crises—from battlefield injuries to mass-casualty disasters.

Challenges and Opportunities

While challenges such as limited instructors, equipment shortages, and uneven doctrinal integration persist, they also open doors to innovation:

- Developing indigenous, affordable combat medical gear.
- Establishing a National Trauma Registry based on Indian data.
- Embedding TCCC principles in all levels of military education.
- Using prehospital TCCC as a tool of soft power and humanitarian diplomacy.

The Way Forward

India must now transition from selective adoption to **full institutionalisation** of prehospital TCCC. The outlined recommendations—centres of excellence, field-level training networks, indigenous innovation, and policy-driven support—provide a clear path forward. The goal is a **self-sustaining TCCC ecosystem** where field units form the backbone, regimental centres serve as training engines, and continuous learning drives doctrine evolution.

Closing Perspective

In the words of Field Marshal Sam Manekshaw: *“The safety, honour and welfare of your country come first, always and every time.”* TCCC embodies this ethos—it safeguards the soldier who safeguards the nation. By institutionalising prehospital TCCC, India empowers every combatant not only to fight but also to save. It represents an investment in strength, survival, and solidarity—turning battlefield adversity into resilience. The soldier on the frontlines deserves nothing less.

The introduction of TCCC into Indian pre hospital trauma life support systems represents a critical step toward modernising combat casualty care. However, for it to achieve its full potential, **policy-level interventions, institutional frameworks, and doctrinal integration** are essential. The following recommendations provide a structured roadmap for the Armed

Forces, civilian hospitals, and policymakers to embed TCCC as a national standard in trauma care.

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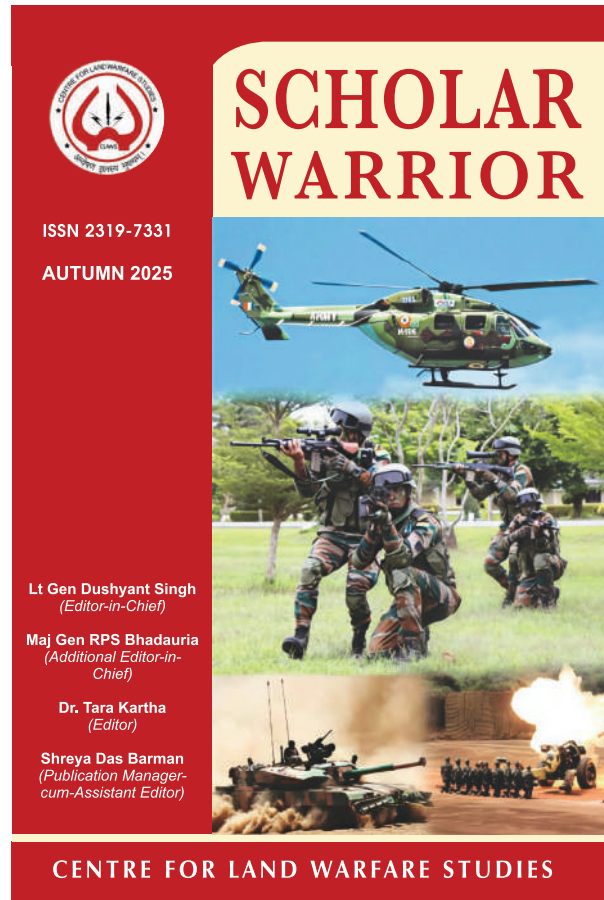
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Modern warfare has undergone a profound transformation, characterised by asymmetric threats, hybrid conflicts, and close-quarter urban engagements. These operational settings often result in high casualty rates, many of which are preventable with timely pre-hospital medical intervention. Global military data, including studies from the United States and NATO campaigns, indicate that nearly 25% of combat deaths are potentially preventable—mainly due to uncontrolled haemorrhage, airway obstruction, and tension pneumothorax. Tactical Combat Casualty Care (TCCC), developed by the US military in the mid-1990s, emerged as a structured, evidence-based approach to managing trauma under hostile conditions.

Traditionally, the Indian Armed Forces have depended on conventional Advanced Trauma Life Support (ATLS) protocols. However, the nature of modern operations—including counter-insurgency missions, high-altitude warfare, and terrorism-related engagements—necessitates a shift toward combat-specific, field-adapted medical care. Recognising this, the focus has moved from hospital-based training to comprehensive pre-hospital TCCC training initiated at regimental training centres, corps battle schools, and unit levels. This decentralised model aims to empower first responders and combatants to deliver lifesaving care at the point of injury, ensuring immediate, effective interventions even before evacuation.

This paper explores the evolution of TCCC globally, its adaptation within the Indian Armed Forces at the regimental and unit levels, and its strategic impact on battlefield survivability. It also analyses the challenges of implementing TCCC training in diverse operational terrains and proposes recommendations for institutionalising a standardised pre-hospital trauma care doctrine. The analysis underscores that regimental-level TCCC training forms the critical foundation for a resilient, combat-ready force, bridging the gap between operational realities and medical capability in the field.

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