

MEDEVAC

MERTs, PEDROs, DUSTOFF

What is the winning formula for medical evacuation operations?



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INTRODUCTION

Severe challenges remain in projecting highly effective combat trauma care to front line forces and ensuring injured military and civilian personnel are swiftly and safely evacuated to medical facilities for enhanced care.

This is why Defence IQ is to host its inaugural **MEDEVAC** symposium in November 2012, in cooperation with the **European Air Group**, bringing together senior military medical officers to explore the challenges surrounding medical evacuation and in-theatre care, such as the standardisation of equipment, the interoperability of medical teams and their equipment and the modernisation of equipment and medical evacuation platforms.

Ahead of the conference, you can herein read up on a few of the case points we'll be looking to discuss. Key to recent developments have been the need to compare and contrast **European and US methodologies** for aeromedical evacuation, and analysing how these sometimes contrasting philosophies and procedures impact survival rates. This report therefore offers some foundation knowledge, including an overview of terminologies, and some easy to digest snapshot guides to the equipment and processes currently being used, intended to arm our delegates with a better understanding of the topics on the table at this year's symposium.

The event itself will provide a pertinent opportunity for the military medical community and industry partners to gain the information they need to confront the challenges facing our forces' greatest force multiplier. Attendees will learn from the world's leading medical evacuation practitioners as to how they are advancing their **forward, tactical and strategic evacuation capabilities**. They will gain unparalleled insight into how challenges such as **standardisation and interoperability** are being confronted by air, land and military medical forces. And importantly, they will strengthen their knowledge as to how medical companies are **developing their technologies** to better aid future medical evacuation missions in harsh operating environments.

I hope you're able to join us at the conference.

Padraic McCluskey
Conference Director
Defence IQ



In cooperation with the European Air Group



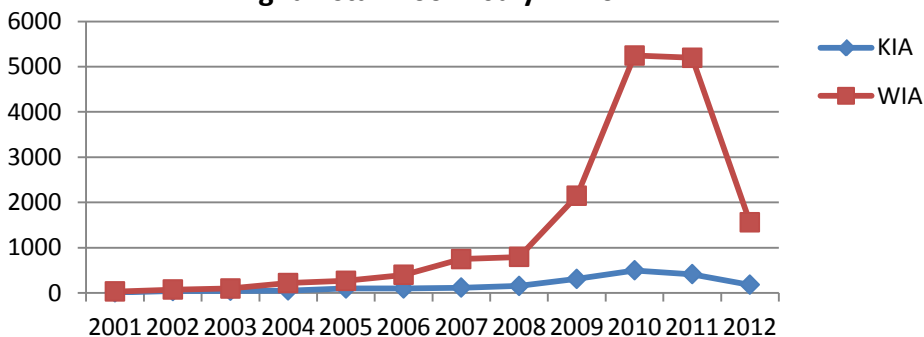
UPDATE

Statistics in Afghanistan have shown that despite a higher tempo and intensity of operations the number for the “Killed in Action” (KIA) has decreased whilst the figures for the “Wounded in Action” have increased. This shows that medical teams are faced with heightened demand to steady survival rates. However, while improvements can be seen, challenges remain.

This report seeks to reveal the elements that are making these improvements possible.

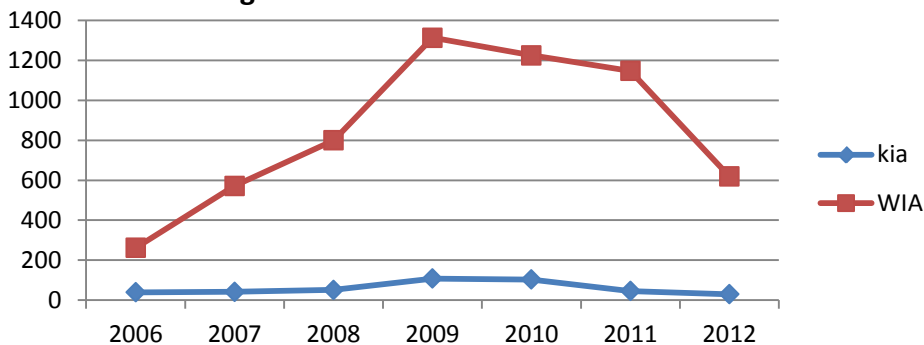
STATISTICS

US Wounded In Action (WIA) / Killed In Action (KIA) -
Afghanistan 2001 - July 12 2012



Source - Based on data from U.S. Department of Defense, Statistical Information Analysis Division, https://www.dmdc.osd.mil/dcas/pages/report_oef_month.xhtml.

British Wounded In Action (WIA) / Killed In Action (KIA) -
Afghanistan 2006 - June 30 2012



Source - Based on data from Defence Analytical Services and Advice (DASA) <http://www.dasa.mod.uk>

WHAT ARE MERT, PEDRO AND DUSTOFF?

QUESTION

'Should there be a standardized MEDEVAC response across all units, adopting a single standard of capability to perform the entire mission set from POI to Role III?'

The Medical Emergency Response Team (MERT) is defined as:

'The medical component of an Incident Response Team where the capability may be delivered in the maritime, littoral, land or air environments. MERT is used when the clinical situation dictates the need for **specialist Pre-Hospital Emergency Care (PHEC)** interventions during MEDEVAC'.

Dedicated Unhesitating Service To Our Fighting Forces (DUSTOFF):

The role of the Dustoff is to **evacuate wounded personnel** from coalition outposts Forward Operating Bases (FOBs), Patrol bases (PB) and Combat Outposts (COP). Their job is to not only pick up wounded military personnel but also civilian casualties, including the enemy.

PEDRO:

U.S. Air Force crews trained in CSAR and medical aid who fly in armed, unmarked HH-60 Pavehawk helicopters. They fly in pairs and **do not need an escort** from an attack helicopter.

MERT & PEDRO: COMPARED

British Army Maj. Andy Haldane

“At Camp Bastion, the British team works alongside an American Pedros team. Pedros are Air Force helicopters carrying pararescue special forces who are trained to go into heavily combative zones to extract casualties. The two forces complement each other and highlight two approaches to combat emergency medicine.”



PEDRO 66

“The experts are not in agreement over the best way to handle these trauma patients, whether for speed or for the interventions we can do. We are still not 100 per cent clear whether what these people need is ‘as fast as possible back to surgery’ or ‘as fast as possible back to surgery with the intervention we can do with anaesthesia and a blood infusion.’ We feel it is best to take the emergency care unit to the patient as best as possible.”



MERT & PEDRO: COMPARED

The CH-47 Chinook used by the MERT is a larger aircraft than the HH-60, thus accommodating a larger support team, a greater number of casualties, more equipment, an more space to provide care to casualties.



British MERT (Medical Emergency Response Team) is able to bring a full resuscitation team to the Point of Injury and provide aggressive treatment to severely wounded casualties but their response time is sometimes longer than Army MEDEVAC or PEDRO.'

In RC-SW, the MERT is dispatched for the most severely wounded, PEDRO is dispatched for ALS type cases and DUSTOFF for all others. MERT will be dispatched preferentially to PEDRO or DUSTOFF even when the latter units have a more rapid response time. The thought behind this decision is that even though MERT may be slower, resuscitation will actually be started for the patient sooner. For example, if MERT has a 15 minute response time to the POI and DUSTOFF a 10 minute response with a 10 minute flight subsequently to the Role II or III, MERT will be dispatched. In other words the patients' resuscitation will begin in 15 vs. 20 minutes. This delay is perceived unfavourably by line and DUSTOFF commanders.



ADVANTANGES OF MERT

While the British Chinook may take longer to react to a call it has some key attributes that can help it to save lives.

A dedicated and highly capable air platform which is well armoured, well protected (M-60 and GPMGs/miniguns) and fast reacting



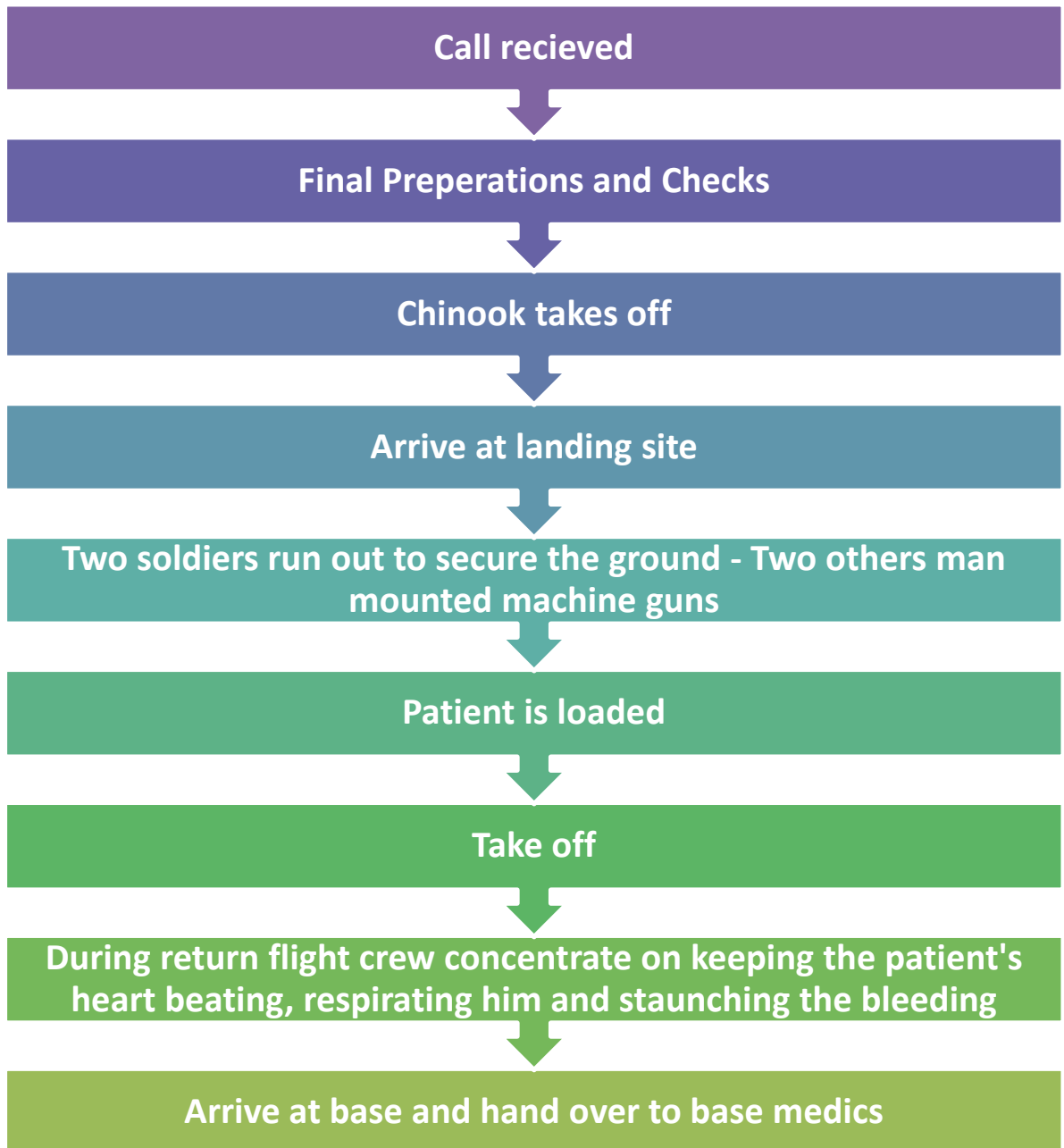
Carriage of blood and plasma and hypothermia mitigation kit (EN-FLOW, BLIZZARD)



The ability to Rapid Sequence Induction (RSI)



THE MERT PROCESS



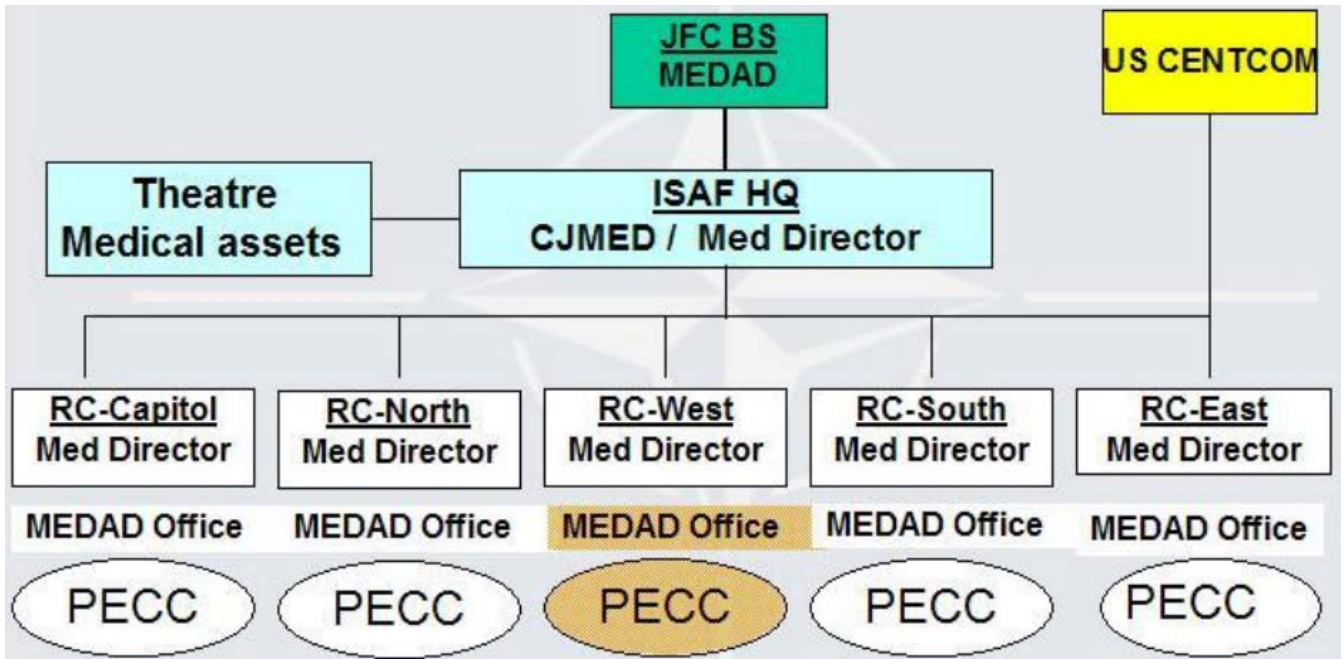
9 LINE REQUEST

Line 1
Location of the pick-up site.
Line 2
Radio frequency, call sign, and suffix.
Line 3 - Number of patients by precedence:
A - Urgent
B - Urgent Surgical
C - Priority
D - Routine
E - Convenience
Line 4 - Special equipment required:
A - None
B - Hoist
C - Extraction equipment
D - Ventilator
Line 5 - Number of patients:
A - Litter
B - Ambulatory
Line 6 - Security at pick-up site:
N - No enemy troops in area
P - Possible enemy troops in area (approach with caution)
E - Enemy troops in area (approach with caution)
X - Enemy troops in area (armed escort required)
* In peacetime - number and types of wounds, injuries, and illnesses
Line 7 - Method of marking pick-up site:
A - Panels
B - Pyrotechnic signal
C - Smoke signal
D - None
E - Other
Line 8 - Patient nationality and status:
A - US Military
B - US Civilian
C - Non-US Military
D - Non-US Civilian
E - EPW
Line 9 - NBC Contamination:
N - Nuclear
B - Biological
C - Chemical
* In peacetime - terrain description of pick-up site

The 9-Line MEDEVAC format is used for requesting urgent evacuation of combat casualties from the battlefield. Proper and accurate use of the '9-Liner' data ensures that no time is wasted in getting a wounded soldier to medical care.



MEDICAL C2-STRUCTURE



The importance of PECC

Patient Evacuation Coordination Cell (PECC) enables the co-ordination of military assets and operations. This requires full situational awareness in order to achieve the huge variety of tasks. The factors to be considered can be divided into two groups: The 'non-medical' and the 'medical'.

Considerations

Medical
Patient's condition
Specialist availability
Medical equipment availability
Hospital capacity
Hospital capabilities

Non medical	
Distance	Helicopter NTM
Terrain	Refuelling availability
Weather	Crew Rest
Illumination	Asset availability
Enemy action	Own Artillery/AD

THE TEAMS



Chinook Crew x 4

Paramedic x 2

Flight Nurse

QRF (4 crew)

Specialist Trauma Doctor

AH-64 Apache (2 crew)

PEDRO 66

Pilot

Co-pilot

Flight Engineer

ParaJumper x 2

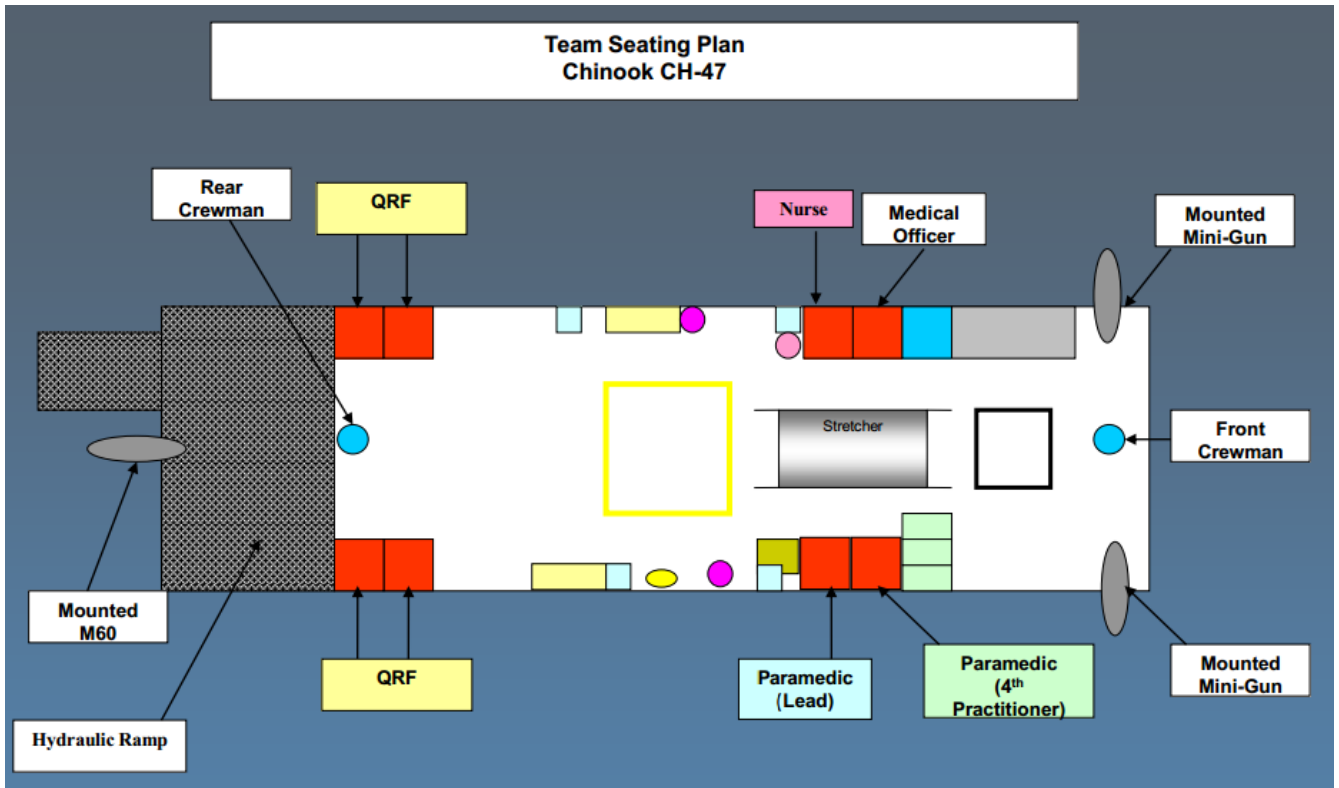


CH-47 CHINOOK

Aircraft Protection

1. Kevlar Armour
2. Missile Jamming Systems
3. Chaff and Flare
4. Aircraft Mounted Guns (GPMG /Mini-Gun)
5. Self-sealing Fuel Tanks

Capacity : Up to 8 stretchers
Speed: 196 mph
Endurance : 4 hours (approx)



HH-60 PAVEHAWK

Designed for unique airborne rescue missions, both military and civilian, undertaken by pararescue jumper (PJ) crews. The HH-60, a modified version of a Black Hawk helicopter, is equipped with weather radar and anti-icing systems to handle every condition, advanced night-vision technology and automatic flight control, and two powerful machine guns.



Staff Sgt. Mark Bedell, a pararescueman at Georgia's Moody Air Force Base: "We train for a quick snatch-and-grab of injured personnel, where we do a quick air land from the help, get out on the ground, pull security, find out the patient status, grab him and him on the help as fast as possible... it usually takes less than a minute."



EXAMPLES OF NATO EQUIPMENT

The Oxylog 3000



Is a time-cycled, volume-controlled and pressure-controlled emergency and transport ventilator for patients requiring mandatory or assisted ventilation with a tidal volume from 50 mL upwards.

Patient monitor Propaq 106 EL



Provides patient vital sign waveforms and numeric data. Features include an ECG channel, heart/pulse rate, Smartcuf® noninvasive blood pressure, motion tolerant pulse oximetry, impedance respiration, and temperature, as well as full patient alarms and equipment alerts and trends.

EXAMPLES OF NATO EQUIPMENT

Suction unit Accuvac



Can be used for suctioning the patient's oral cavity, nose and throat and bronchial system and for deflating air mattresses and inflatable splints. The crash resistant wall mounting protects the from damage.

ECG/Defibrillator Zoll M



Provides diagnostic and therapeutic capabilities on a high contrast display. Performs defibrillation, external pacing, interpretive 12-Lead ECG, SpO₂, EtCO₂, built-in AC or DC power and complete data management system.

EXAMPLES OF NATO EQUIPMENT

Blood analysis unit I-Stat



Accelerates the availability of critical test information to help expedite diagnosis and disposition of patients. It has cartridges for the most commonly ordered tests in all critical care areas, including: blood gases; chemistries; lactate; electrolytes; hemoglobin and hematocrit; and coagulation (including PT/INR)

Respirator Lifebase III with Medumat Standard



Is a system for drawing oxygen supplies for MEDUMAT ventilators and MODULS from oxygen cylinders, separate cylinders or a central gas system.

ALLIED JOINT MEDICAL SUPPORT DOCTRINE (AJP - 4.10) - EXTRACTS

The following are extracts from the AJP-4.10 (published in 2002), which have been included in order to help illuminate some of the decision making with regards to the arming of MEDEVAC helicopters.

Medical Force Protection

General

In a medical context, force protection is the conservation of the fighting potential of a force so that it is healthy, fully combat capable, and can be applied at the decisive time and place. It consists of actions taken to counter the debilitating effects of environment, disease, and selected special weapon systems through preventive measures for personnel, systems, and operational formations.

Medical force protection programmes will cover the following key tasks:

- a. Assessment of the adequacy and readiness status of the medical support structure to provide required medical services.
- b. Education and training campaigns to protect and promote the health of the troops.
- c. Promotion of what works well across the entire force.
- d. Identification and working toward resolution of critical issues and shortfalls.

Medical Force Protection Assessment

Medical force protection assessment focuses on the readiness of the medical support structure to prevent and respond to personnel injuries and illnesses (i.e. organisational and planning readiness). Major categories of criteria for conducting this assessment include NATO STANAGs and Operational Plans (OPLANs)

Conduct of deployed force exercises requires also assessment functions to be performed to key aspects of medical support. Assessment criteria utilised for this function may focus on a range of both organisational, resource, and performance characteristics of the medical support structure, for the exercise and training forces, and for home based units supporting insertion of exercise forces.

Force protection may be defined as the protection of personnel, facilities, and equipment in all locations and situations. Three primary focus areas for force protection programmes established by NATO commanders, and incumbent upon all CNs for proactive collaboration, include the following:

- a. Physical and Operational Security: guarding personnel and material against hostile intent.
- b. Safety: protecting individuals against injuries from inappropriate procedures and inattention.
- c. Health: protecting individuals against the physical environment and disease.

Medical support capabilities, which may serve as qualitative items for assessment, include:

- a. Air, maritime and ground evacuation capabilities.
- b. Emergency surgery and treatment capabilities.
- c. Epidemiological surveillance and medical reporting functions.
- d. Medical information collection and intelligence functions.
- e. Preventive and veterinary services functions.
- f. Preventive and health education for deployed troops.
- g. Overall medical planning functions.
- h. Medical support to non-NATO personnel and humanitarian assistance.

SHOULD DUSTOFF BE ARMED?

One of the most **heated debates** in the current US MEDEVAC community is whether Dustoff helicopters should continue to take to operations without onboard armed protection. Here are a few of the main arguments for and against...



- No delay in waiting for an armed escort
- Red Cross platforms are not 'off limits' to belligerents unsigned to the Geneva Convention...
- ...While wording of the Geneva Convention is outdated for modern insurgency-based warfare
- Dustoff platforms are already not strictly 'non combatant' as routes are not agreed between all parties within a conflict
- Training for medical crews is already lacking – armed asset training could simply be added to a much needed revamp



- Assets less flexible if deploying one type of platform rather than two, where platforms may be diverted to combat roles
- Requires more crew, more training, and more onboard specialisms to effectively use weapon systems
- Higher risk of becoming targeted in combat, of blue-on-blue incidents, and of civilian casualties, particularly when under high urgency evacuation scenarios
- Additional expenditure and broad change of legacy structure (i.e. likely to require a long delivery time)

WHAT NEEDS TO BE DISCUSSED?

The risk to ISAF soldiers is increasing – irregular warfare has created a heightened demand for MEDEVAC operations. This requirement cannot be ignored. So rather than looking at what we have done, how can we re-establish what we will need to do?

Medevac protocols, equipment and personnel need to be standardised – this is paramount and in everyone's interest, but we must ask how we can make this possible. And can we be making better use of COTS equipment?

How can outdated MEDEVAC staffing models be modernised for the 21st century and the new challenges that modern conflict has presented us with? Can we, for example, increase the clinical skills of flight surgeons to better supervise and train flight medics?

How can we ensure MEDEVAC lessons observed become lessons learned, and applied, particularly now that there is increasingly opportunity for in-theatre training as Afghanistan withdrawal dates draw near?

The medical equipment used in AirMedEvac, the education guidelines and the provided aircraft of each nation have to be compared, so that similarities and differences between the national system and the multinational requirements can be identified and gaps can be closed where applicable.



MEDEVAC 2012

06 - 08 November 2012, The River Room, London, UK

Join us at the [MEDEVAC 2012](#) event and network with others in this critical field.

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[MEDEVAC 2012](#) will provide a pertinent opportunity for the military medical community and industry partners to gain the information they need to confront the challenges facing our forces' greatest force multiplier

What Issues are driving the MEDEVAC Community?

MEDEVAC 2012 will be a platform for intelligent debate on the pressing issues facing this community, helping to build a unified vision for the future of medical evacuation:

- How can **medical equipment and personnel** be standardised for future multinational operations?
- How can militaries make better use of **COTS medical technology** for MEDEVAC missions?
- How can **flight surgeons' clinical skills** be increased to help better supervise and train flight medics?
- How can **outdated MEDEVAC staffing models** be modernised for the 21st century?
- How can the significant **variability in the capabilities of units** conducting rotary wing evacuation be reduced?
- How can it be made sure the **MEDEVAC lessons observed** become lessons learned?



[View the full programme](#)

ABOUT Defence IQ

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