

2011 Military Health System Conference

En Route Critical Care

EVOLVING, IMPROVING & ADVANCING CAPABILITIES

The Quadruple Aim: Working Together, Achieving Success

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26 Jan 2011



Headquarters Air Mobility Command Surgeon's Office

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En Route Critical Care



- Evolution of Critical Care Air Transport
 - Taking Aeromedical Evacuation to Higher Levels
- Improving Care Across the Continuum
 - System within a System
- Advancing Capabilities
 - Closing Gaps in the Continuum
 - Building Partnerships
 - Research, Training and Technology



EVOLUTION OF ENROUTE CRITICAL CARE

In the Beginning...

Patient Evacuation World War II



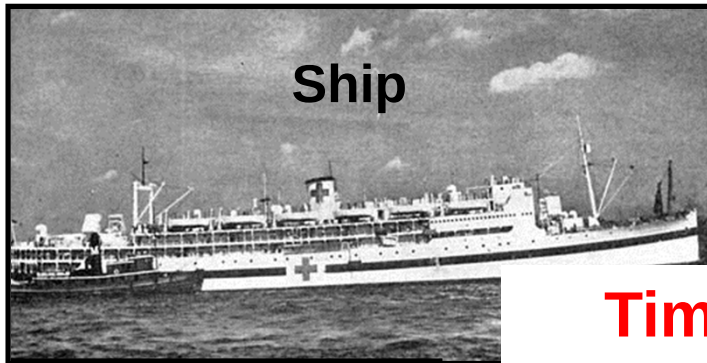
Point of Injury



Battalion Aid Station



Field Hospital

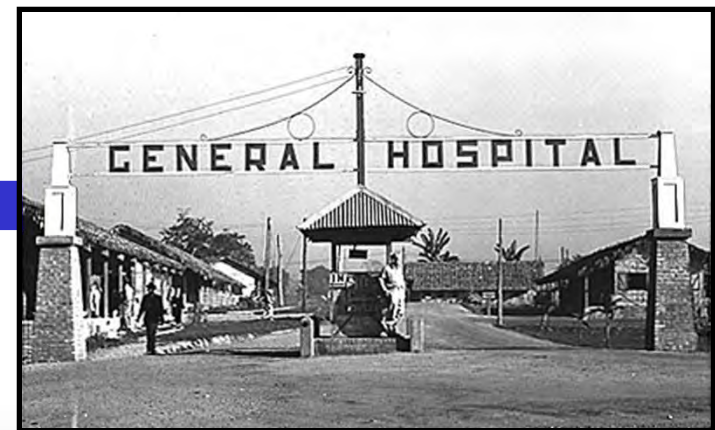


Ship



**Time to
CONUS:
<90 days via
Ship &
Ground**

areas
ays
me



General Hospital

Enter Air Evacuation



- AE System Organized
 - Despite resistance – proven
 - High Volume System for Patient Movement
- Airlift
 - Initially denied use of aircraft
 - Sporadic use of airlift
- Medical Care in the Air
 - Formal Flight Training
 - Flight Surgeons at Airheads
 - Nurses & Med Techs Inflight



World War II



Korean Conflict



Vietnam





Dedicated Airlift

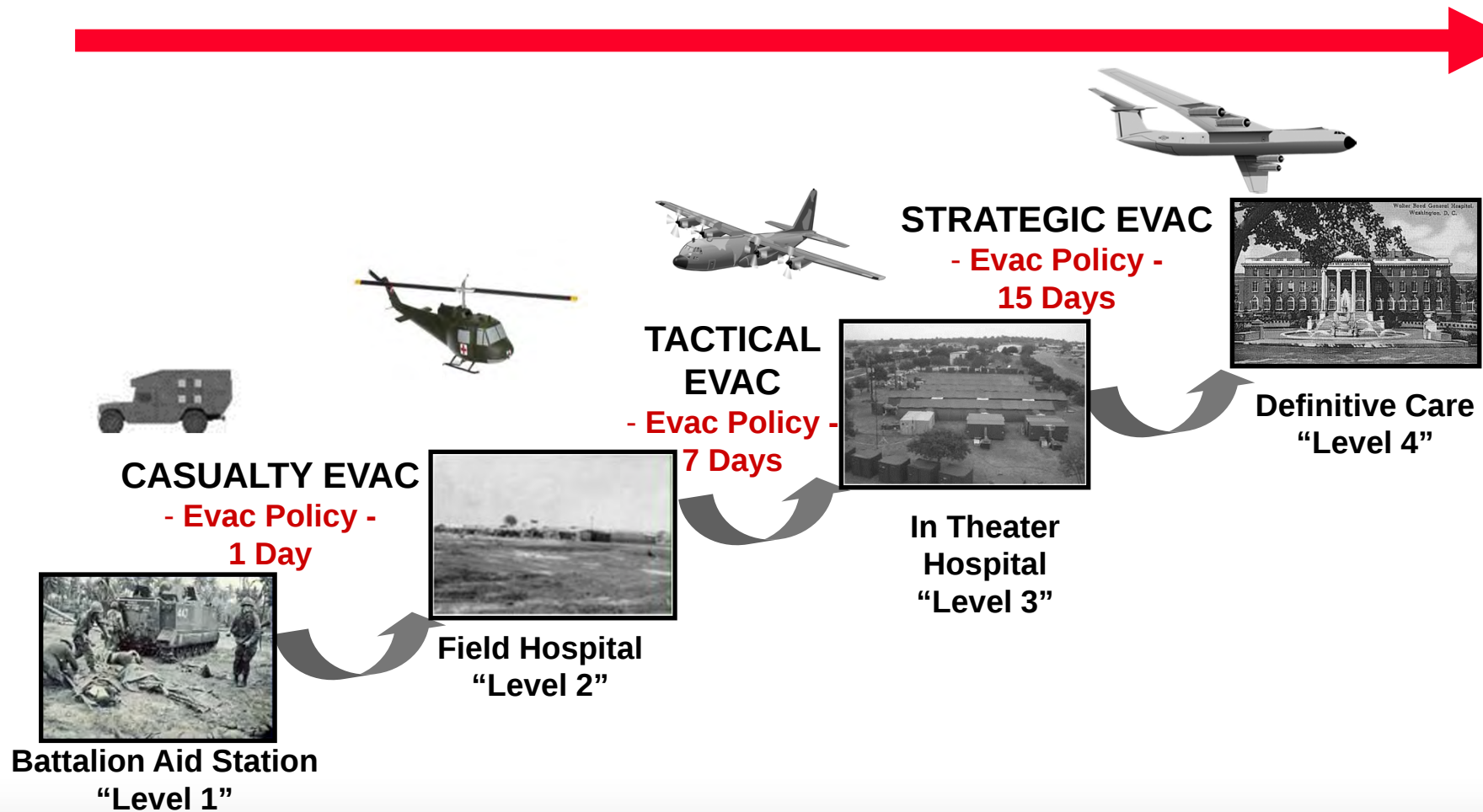
- C-9 Nightingale
- Integrated Patient Support
 - Oxygen
 - Suction
 - **Electrical**
 - Special Care Area
 - Ramp
 - Medical Supplies
 - **Cooking Facilities**
- Limited Range
- Peacetime and Contingency
- Utilized for 30+ years



Continuous En-Route Care: Stable Patient



Historical Perspective



Critical Care Air Transport Begins



- 1988 Gen PK Carlton II presents idea
- 1994 Pilot Unit Stood Up
- 1995 First 6 months
 - Teams managed 20+ critical patients
 - Combat missions/trans-Atlantic missions
 - Supported non-combatant evacuation from Liberia
 - Supported Khobar Towers bombing victims



More than War-time Capability



Civilian Air Crash Guam



MacKay Trophy 2000



Proof Of Concept



USS Cole Oct 2000

Enroute Critical Care Saved Lives



Continue to Save Lives



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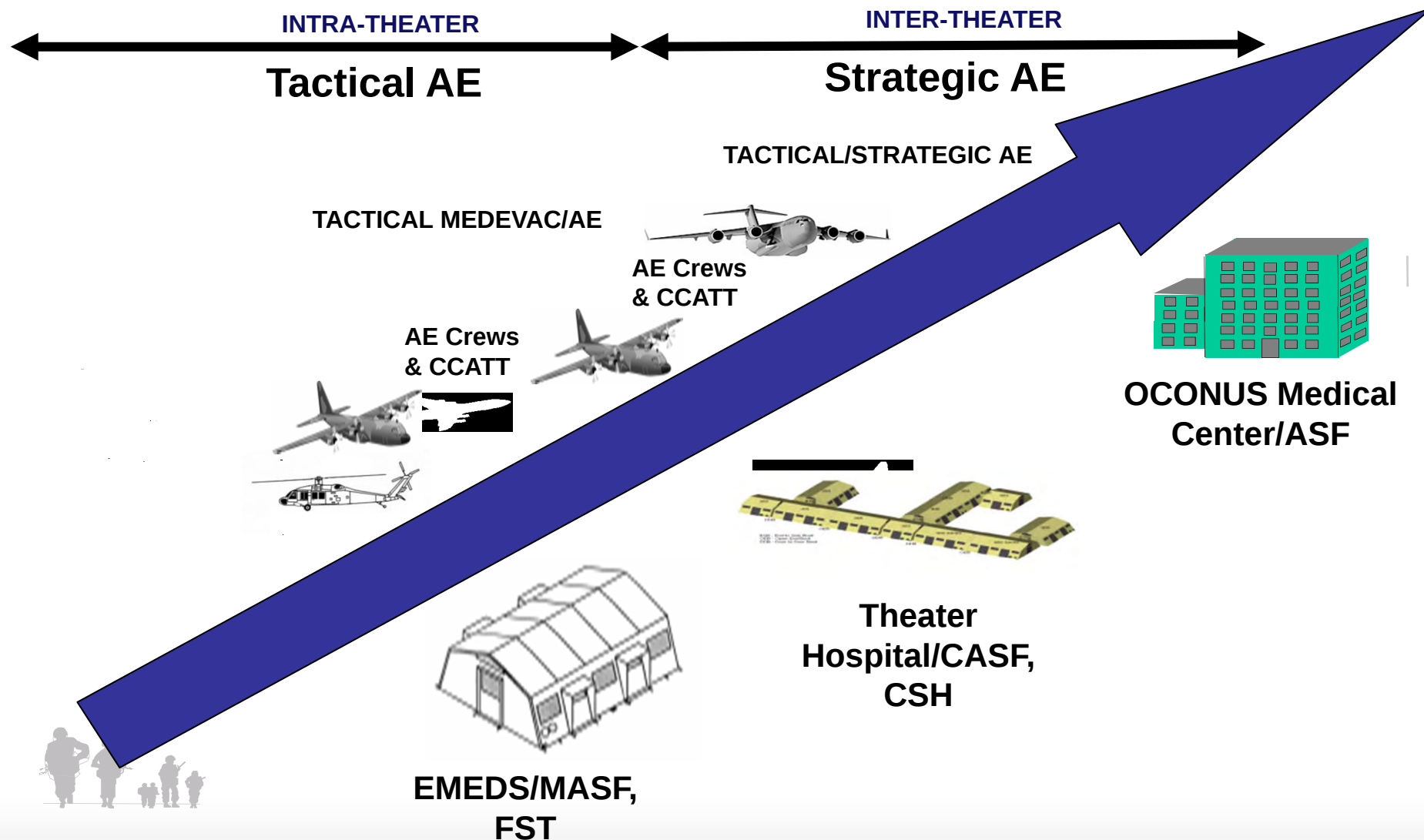
IMPROVING CARE ACROSS THE CONTINUUM

Transformation

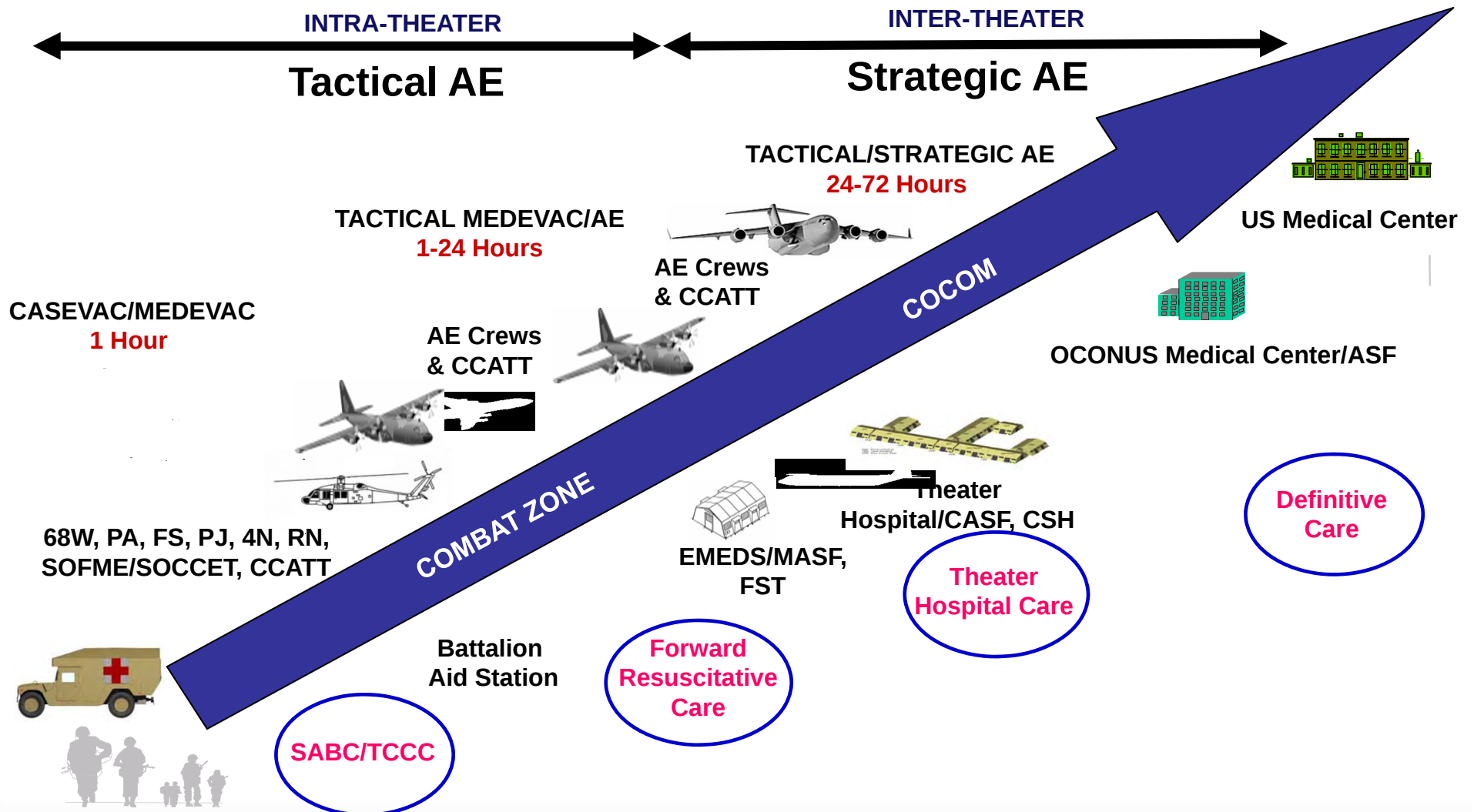


- AE is no longer transporting stable patients between two MTFs
- Care in air equal or higher than that on ground
- Care that is started on the ground will continue until final destination
- Patient Driven Special Teams
 - Critical Care Air Transport
 - Neonatal Intensive Care
 - Burn Team
 - Acute Lung Team

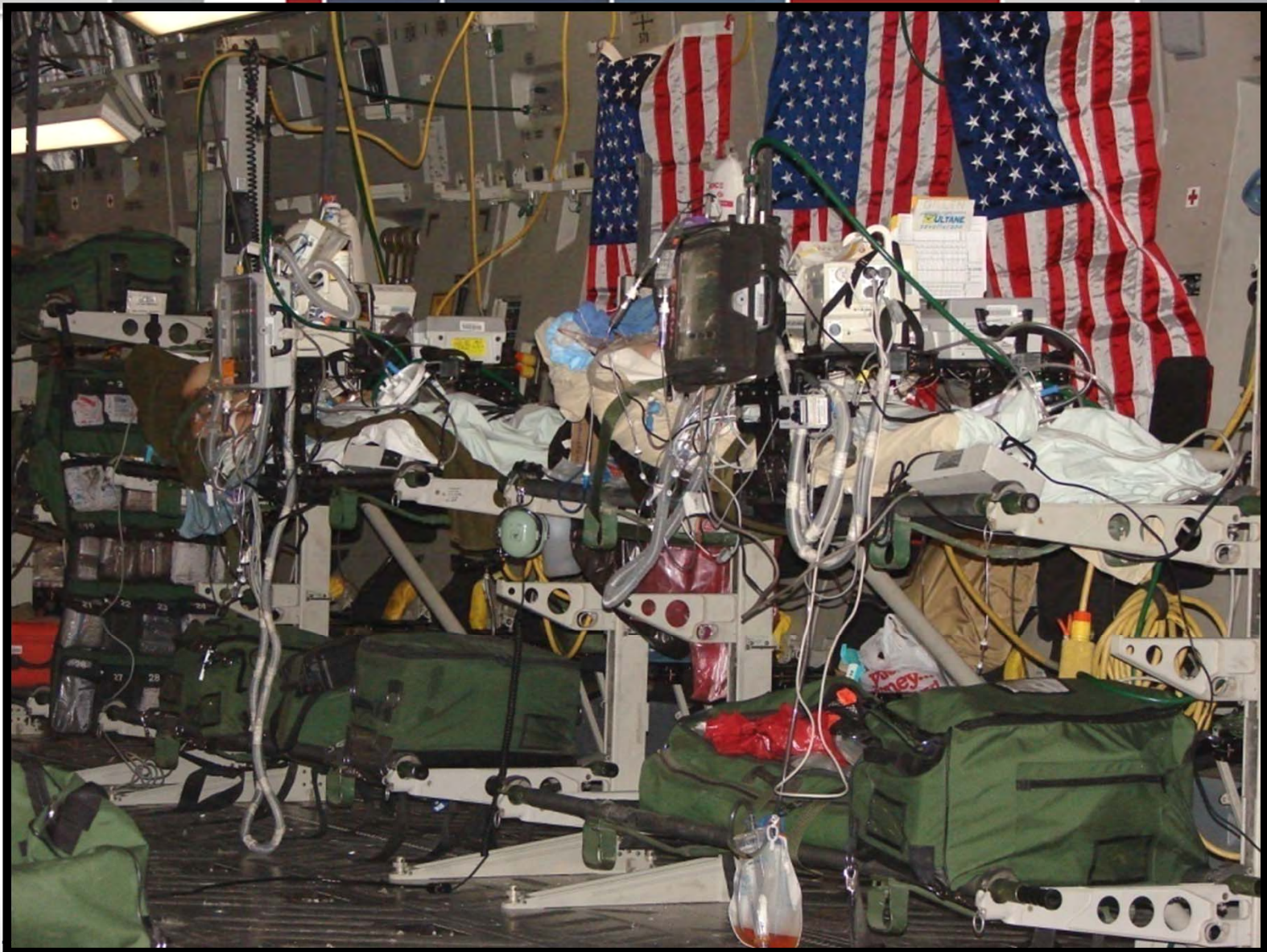
CONTINUOUS EN ROUTE CARE: AE System



CONTINUOUS EN ROUTE CARE: System of Systems



Ability to Move “Stabilizing” Patients



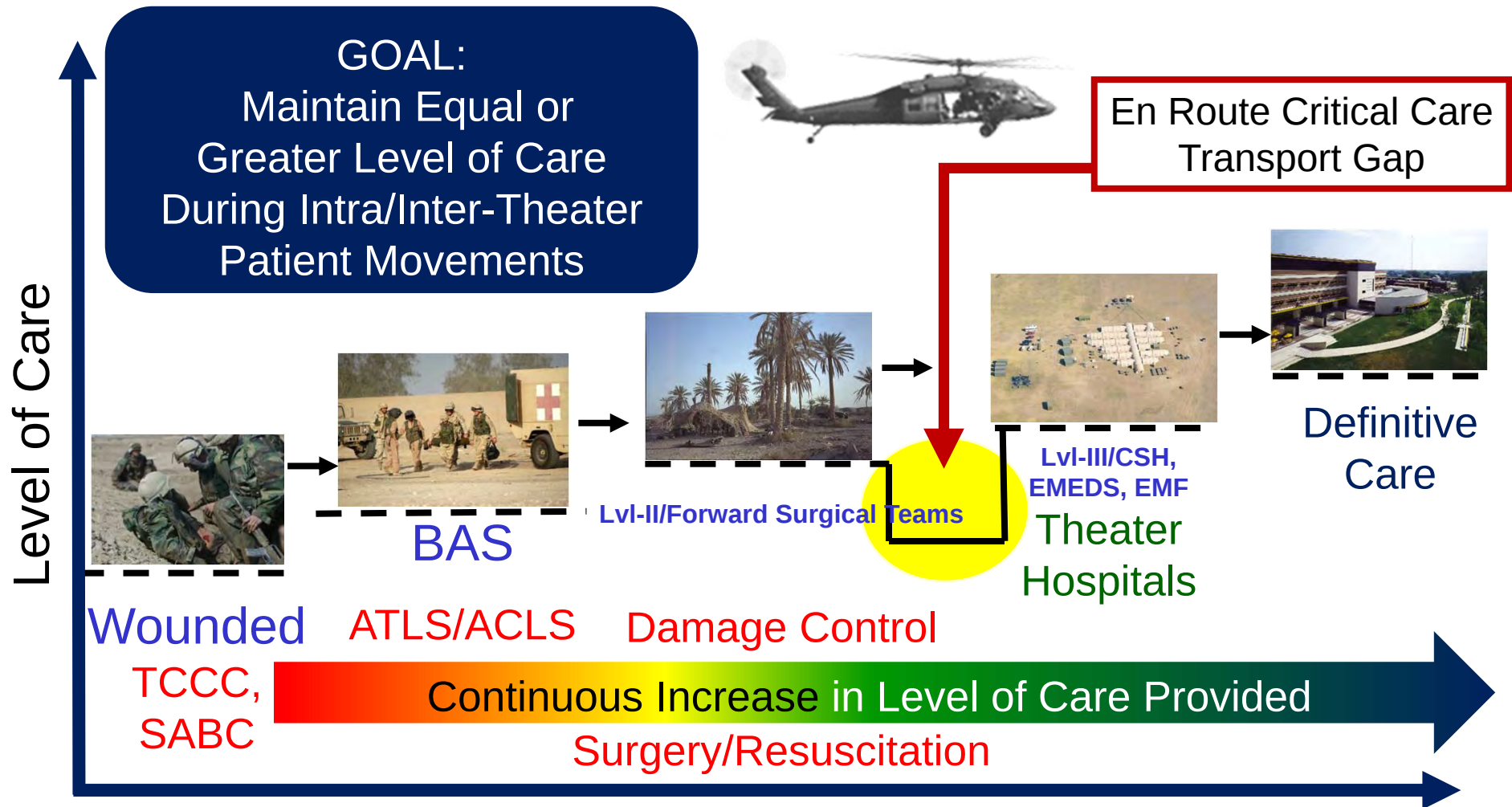
Without It...System Failure





ADVANCING CAPABILITIES

INTRA-THEATER CRITICAL CARE TRANSPORT GAP



BACKGROUND

Current Lvl-II to Lvl-III Patient Movement





CONCERN

- Lowest Ever “Died Of Wounds Rate” Largely the Result of Integrated En Route Care “System of Systems”
- GAP: Ad Hoc Intra-Theater Movement of ICU-Level Patients Utilizing Assets Not Specifically Organized/Trained/Equipped for Critical Care Patient Movements

TACTICAL CRITICAL CARE EVACUATION TEAM (TCCET)





TCCET Personnel/Training

	AFSCs/Experience	Medical Training	Operational Req't/Training
Nurse	• 46M3 CRNA • SUBS: 46N3E Critical Care* 46N3J Emergency Room* * Experience: Active ICU/Critical Care or ER (US Level 1-2 Trauma Center)	• BLS/ACLS • ATLS/PALS • TNCC or ATCN • CCATT/CSTARS-C • Joint En Route Care Course (JECC)	• Operational support physical • Combat Skills Training (CST) • SERE 100, HRC
Provider	• 44E3A Emergency Dept Physician* • SUBS: 45A3 Anesthesiologist* 44M3 Internal* 48R Residency Trained Flight Surgeon* * Experience: Active ICU/ER/Critical Care	• BLS/ACLS • ATLS/PALS • CCATT/CSTARS-C • JECC	• RW ops familiarization incl. night ops (low light & blackout conditions, NVG use, etc.)...JECC

MEDICAL EQUIPMENT



- Lightweight, Modular, Grab-n-Go Medical Supplies Approaching ICU Level Care
 - Rotary Wing or Fixed-Wing
 - Tight, Austere Environs
 - AFSOC & CCATT Equipment
- Personal Protective Ensemble
 - (PPE) To Accompany



TCCET SUMMARY

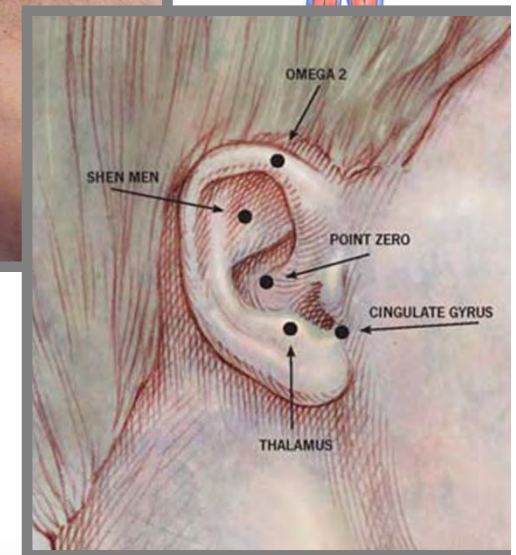
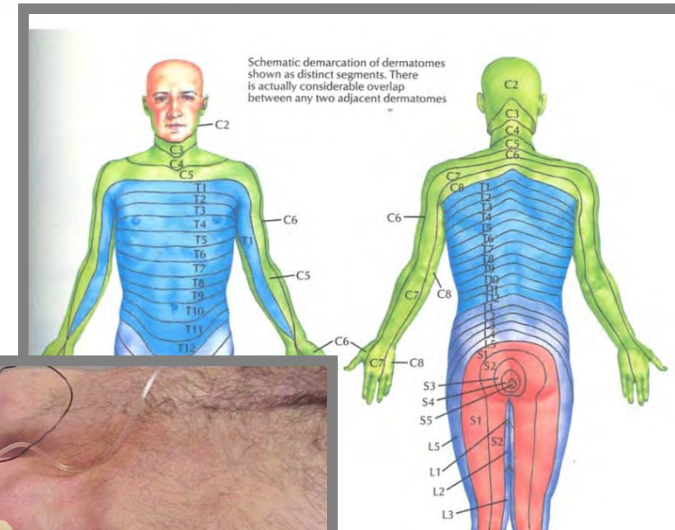


- Current Ad Hoc Solutions Result in Non-Standard Level of Care
- Intra-Theater Movement of ICU-Level Patients
 - Presents Option for Care Gap in Non-AE Missions Lvl-II to Lvl-III
 - Must be Driven by Clinical Requirements
- TCCET Developed to Fill Care Gaps and Augment CCATT
- 6 AF Personnel (2 Teams) & Equipment being prepared for summer deployment

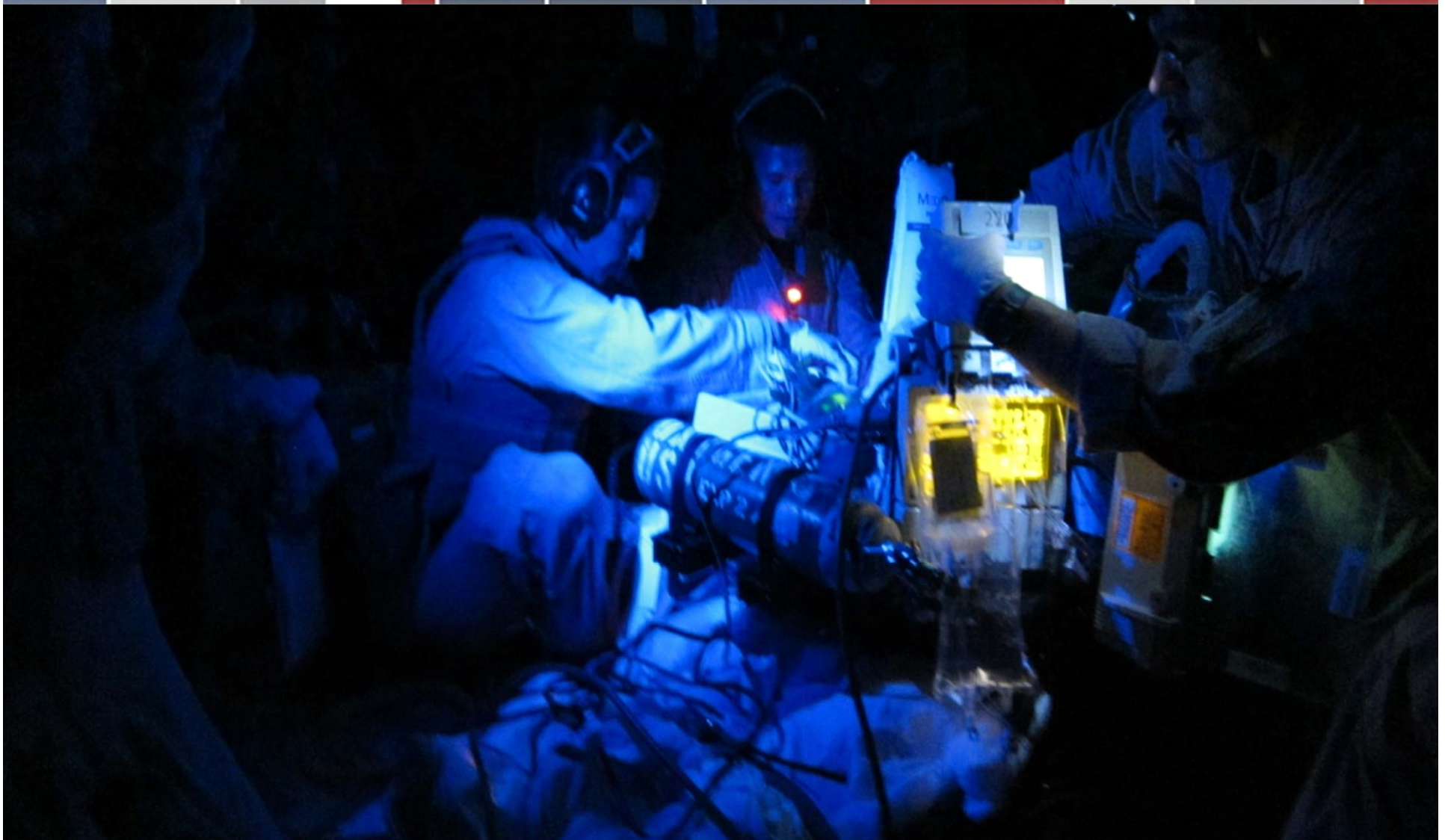
Pain Management



- Epidural Management
- Regional Blocks
- Narcotic Administration
- Acupuncture
 - Feasibility Study Jan 11



Expanding Global En Route Care



AE InterFly: Advancing Interoperability



2011 MHS Conference

Air and Space Interoperability Council



- Mission: Working together to advance global AE response
- Focus areas
 - Medical Equipment
 - Clinical Capabilities
 - Command and Control
 - Doctrine
- Goals:
 - Publish Guidance on each nations capabilities
 - Exercises that demonstrate AE/Critical Care



Building International Partnerships

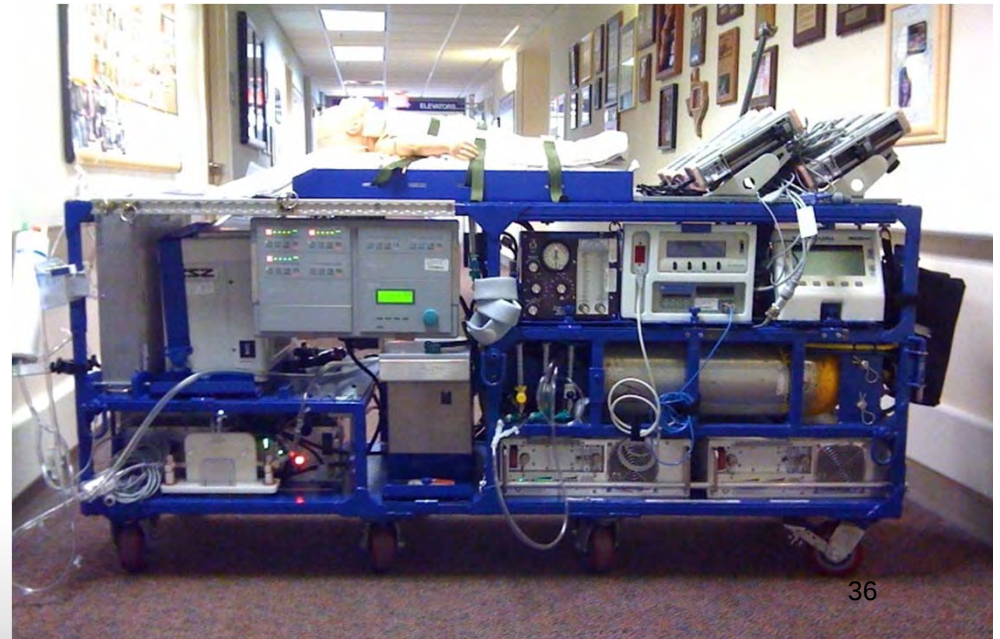


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Civilian Partnerships



- ECMO Pediatric/Neonatology Consortium
- 58 y/o Male unresponsive to care
- Needed Adult ECMO
 - USA ECMO MD
 - USAF Neonatologist
 - Civilian Perfusionist
 - Civilian ECMO RN
- Transported to Iowa



International AE En Route Medical Care Conference



20-21 July 2011

Joint Base McChord, WA

Target Audience: Aeromedical evacuation, patient transport and critical care teams from any nation

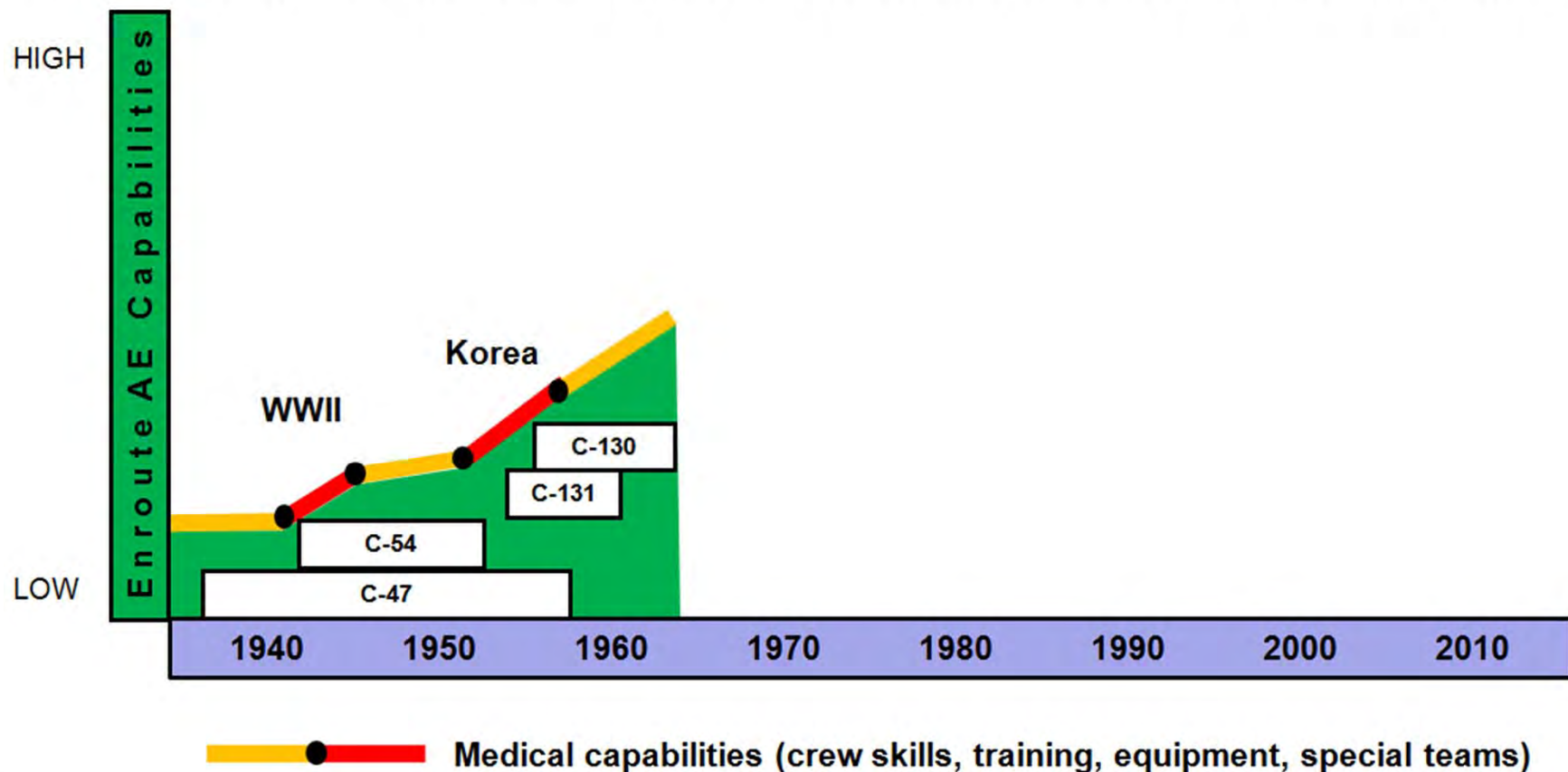
This multinational consortium will allow nations to share advances in patient transport to include clinical management of patients, clinical and aircrew training platforms and new technology used to support patient care.



Aircraft Modernization



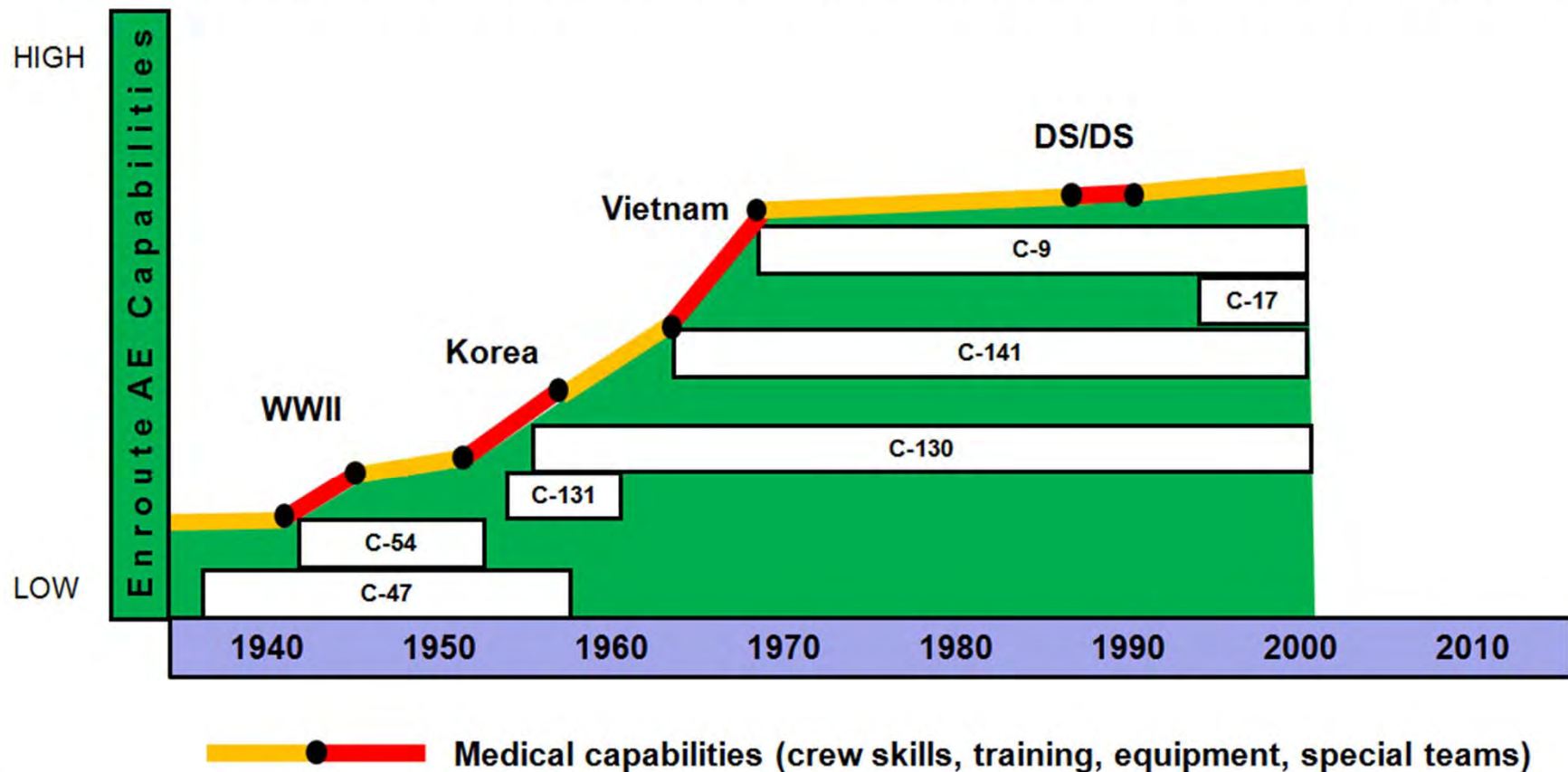
An aircraft's ability to support rapidly developing medical capabilities is vital to continued advancement in En Route Care



Aircraft Modernization



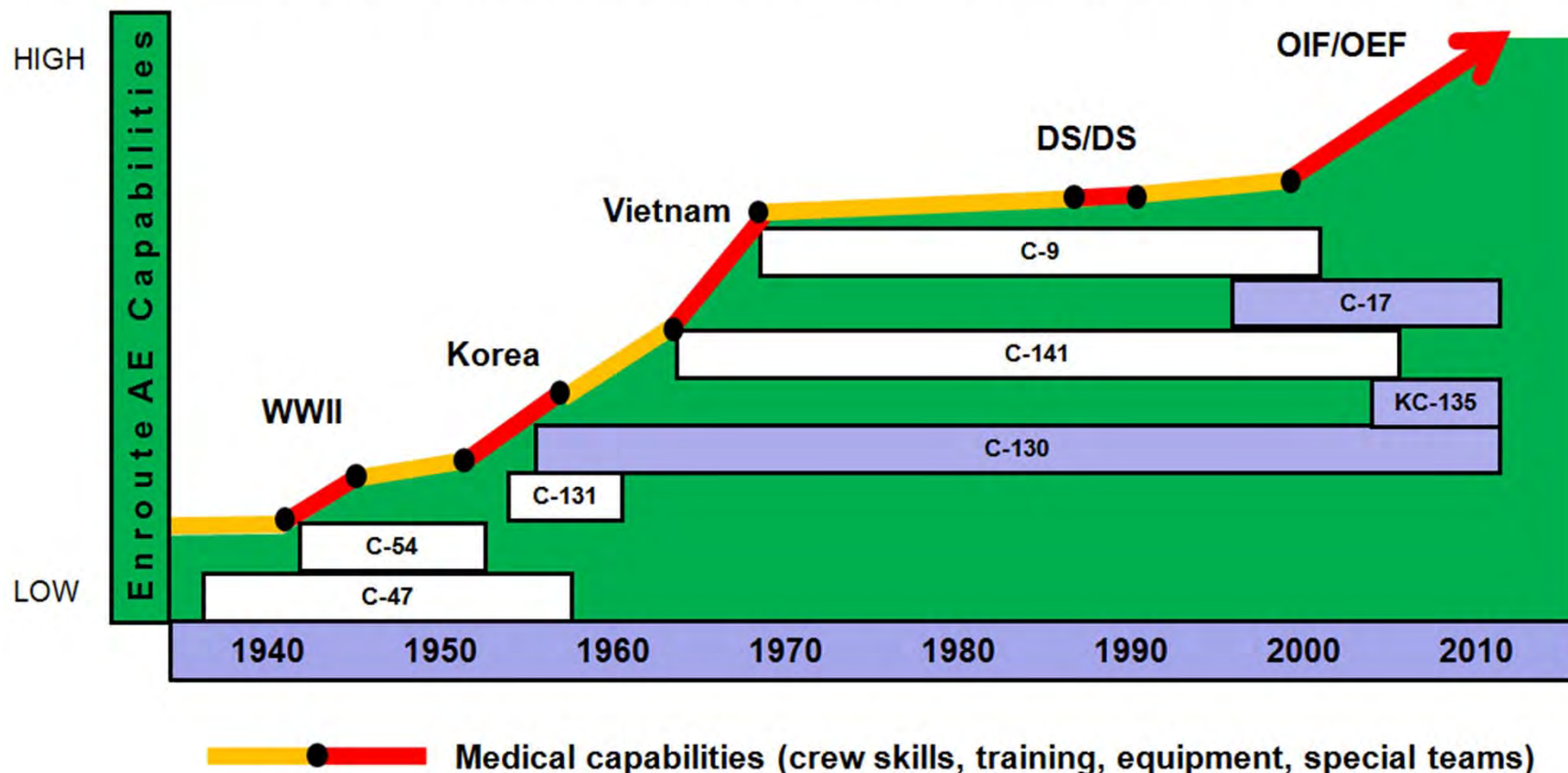
An aircraft's ability to support rapidly developing medical capabilities is vital to continued advancement in En Route Care



Clinical + Aircraft = Capabilities¹⁰



An aircraft's ability to support rapidly developing medical capabilities is vital to continued advancement in En Route Care



Aircraft Design and Acquisition





Clinical and Aircraft Capabilities

AE Support Requirements

Mission	Patient
▪ Loading ▪ Configuration ▪ Systems ▪ Communication (Future)	▪ Environmental ▪ Therapeutic oxygen ▪ Electrical ▪ Tele-Health (Future)
	
Incorporate AE support requirements into aircraft design	

Research, Training and Technology



En Route Care



The Future is Now.....



Questions

