Using Simulation to Prepare Military Medical Providers for the Next Fight

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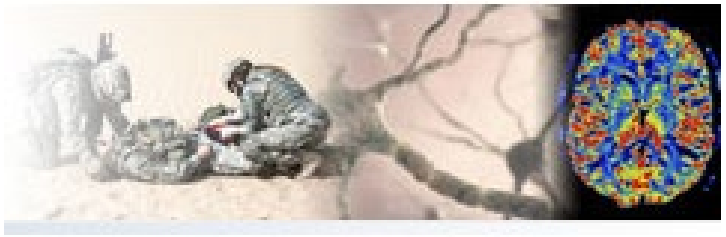
Acknowledgements



Joint Program Committee -1
Medical Simulation and Information Sciences

U.S. Army Medical Research and Development Command

Medical Technology Enterprise Consortium

Contract # W81XWH18C0176 Prolonged Field Care (PFC) U.S. Army Medical Research Acquisition Activity (USAMRAA)

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Today

The current military emergency treatment doctrine is to focus on immediate lifesaving measures and stabilization at point of injury, to include aggressive hemorrhage control, and to rapidly evacuate in 60 minutes or less. This is known as **Tactical Combat Casualty Care** or TC3.

TC3 Saves Lives

Mortality rates were higher at the onset of the Afghanistan and Iraq conflicts, but as efforts were focused onTC3: hemorrhage control, blood transfusions and rapid evacuation, mortality decreased 44% to the lowest in US Military History.

Future Challenges for Caring for the Wounded

"When Lt. Gen. Sean B. MacFarland left Afghanistan in 2013, he said he remembers troops there had an expectation that medevac helicopters would evacuate the wounded within the so-called "golden hour" -- a time period identified by medical professionals as the hour after an injury during which prompt treatment by doctors can often mean the difference between life and death.

In the next fight, particularly against a near-peer adversary, MacFarland said, there likely won't be a golden hour. *Instead, it may take much longer to get medevac missions underway, particularly during the early entry phase against an entrenched enemy, known as an anti-access, area denial operation, or A2AD"*
(From Army.Mil article dated July 26, 2017).

Prolonged Field Care (PFC)

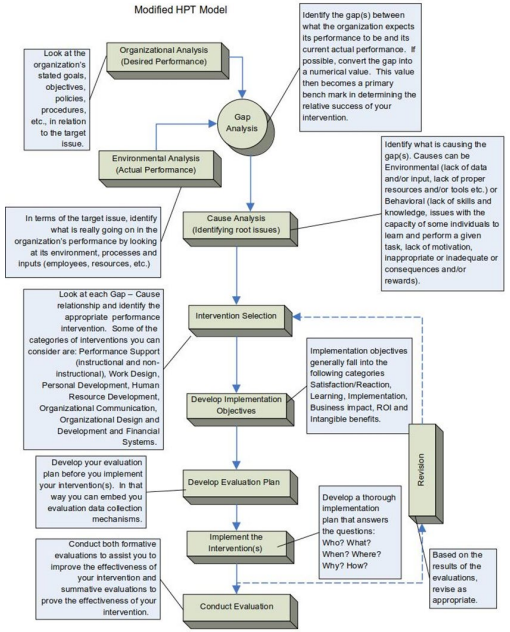
Current Guidelines for Care After Wounding (TC3)

- 0 – 10: enhanced first aid (Care Under Fire)
- 10 - 60 minutes: Tactical Field Care, Tactical Evacuation by medics, and Remote Damage Control Resuscitation (pre-hospital surgery)
- 60 – 120 minutes: Damage Control Resuscitation (hospital surgery)

Prolonged Field Care

- Current evacuation guidelines cannot be met
- The sick and injured may have to remain in the care of frontline medics for up to 72 hours.

The Charge from Joint Program Committee - 1



Conduct an analysis to identify key training and performance needs related to PFC

Design and develop a prototype simulation system to address the identified PFC training needs.

The Team IVIR Approach

72-Hour Clinical and Nursing Skills Focus (differs from TC3)

- Standard emergency procedures
- Extended Hemorrhage Control
- Burn management (Fluid resuscitation)
- Blast Injuries (Special emphasis on female injuries)
- Disease Identification and Management
- Infection control

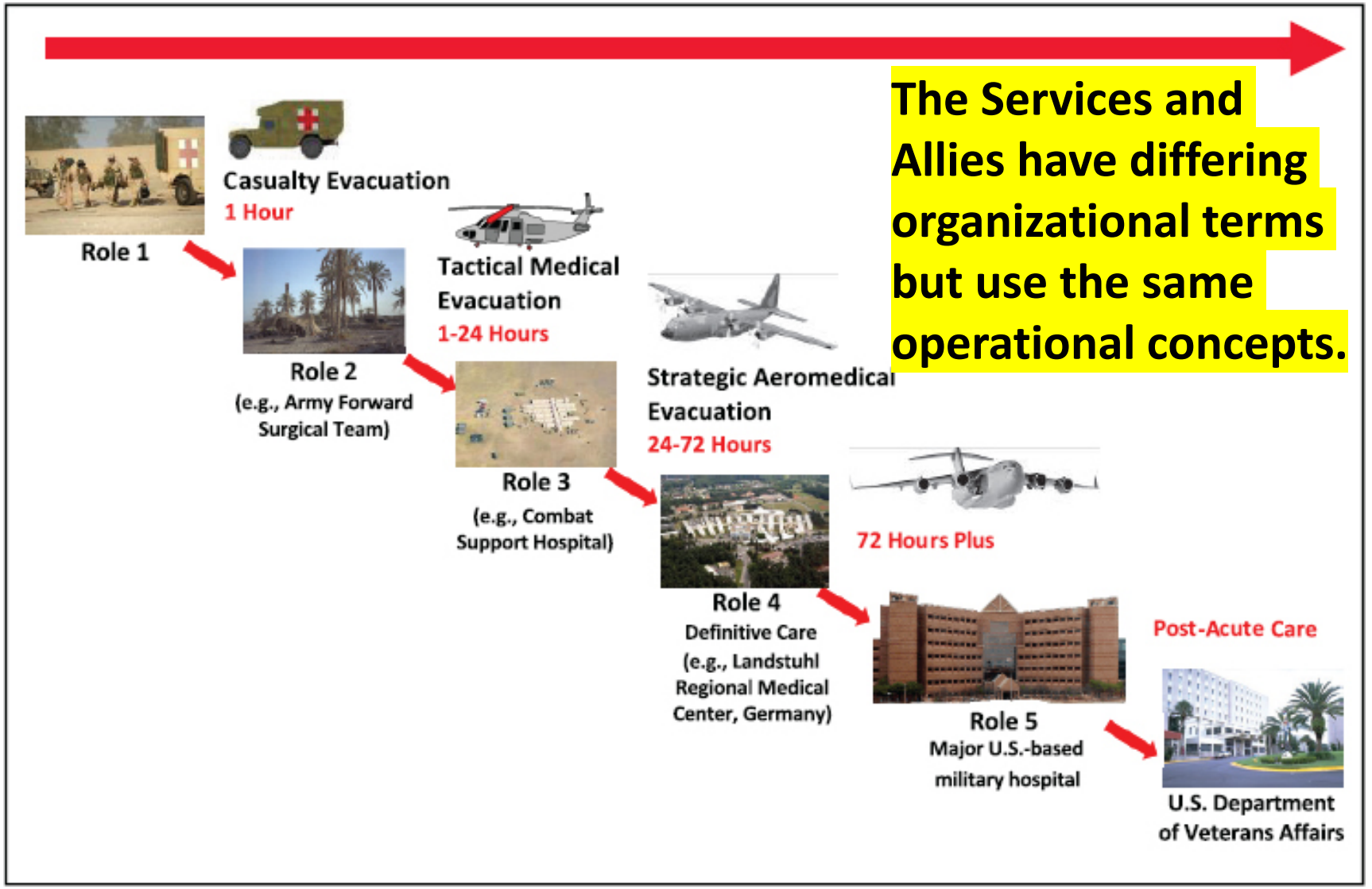
The Team IVIR Approach

Design Focus

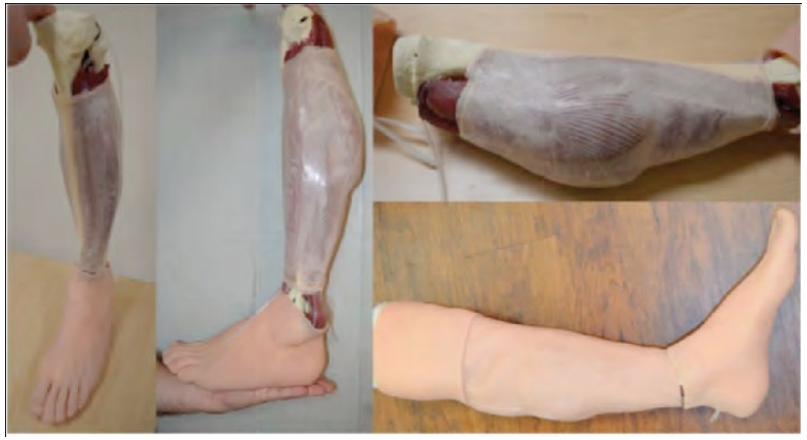
- Extend current human patient simulators
- Functional and clinical modularity – adaptable to variety of clinical and organizational training requirements
- 72-hour sustainment
- Technical roadmap for future development
- Full documentation to facilitate replication

Care and Transport of the Sick and Wounded

The historically low mortality rates in recent conflicts were achieved through the cooperation of the various Services, and our Allies, over time, in both training and execution.



Simulation Facilitates Medical Readiness at the Individual and Small Team Level



The DoD has hundreds of different full patient simulators, part-task trainers, serious games and learning management systems. They are excellent for individual and small team training, but they are not designed to interconnect. This limits their utility and scalability and reinforces organizational silos rather than fostering operational synergy.

Joint Evacuation and Transport Simulation System

The JPC-1 goal for JETS is to network simulations and simulation support systems together into a cohesive network.

The Team IVIR Approach for JETS

Design Focus

- As a starting point, use DoD's proven networking protocols for tactical and strategic simulation.
- Enable connecting most existing simulations and simulation support components.
- Make the system forward compatible to take into account future technology.
- Provide full documentation for replication

Civilian Application

Both the JETS and PFCT projects have direct applicability to civilian mass casualty and disaster relief simulations, and there are generally few technical differences between civilian and military medical simulators.

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