Using Simulation to Prepare Military Medical Providers for the Next Fight

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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.
Mortality rates were higher at the onset of the Afghanistan and Iraq conflicts, but as efforts were focused on TC3: hemorrhage control, blood transfusions and rapid evacuation, mortality decreased 44% to the lowest in US Military History.
“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 (prehospital 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.
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

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

72-Hour Clinical and Nursing Skills Focus (differs from TC3)
The Team IVIR Approach

- 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
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.

The Services and Allies have differing organizational terms but use the same operational concepts.
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.

JETS supports training throughout the continuum of care wherever the learner may be.
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.
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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