Virtual Advancement of Learning for Operational Readiness (VALOR):
Non-Collocated Cross-Role Medical Simulation Training

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Disclosures

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Strategic Background

The "Golden Hour"
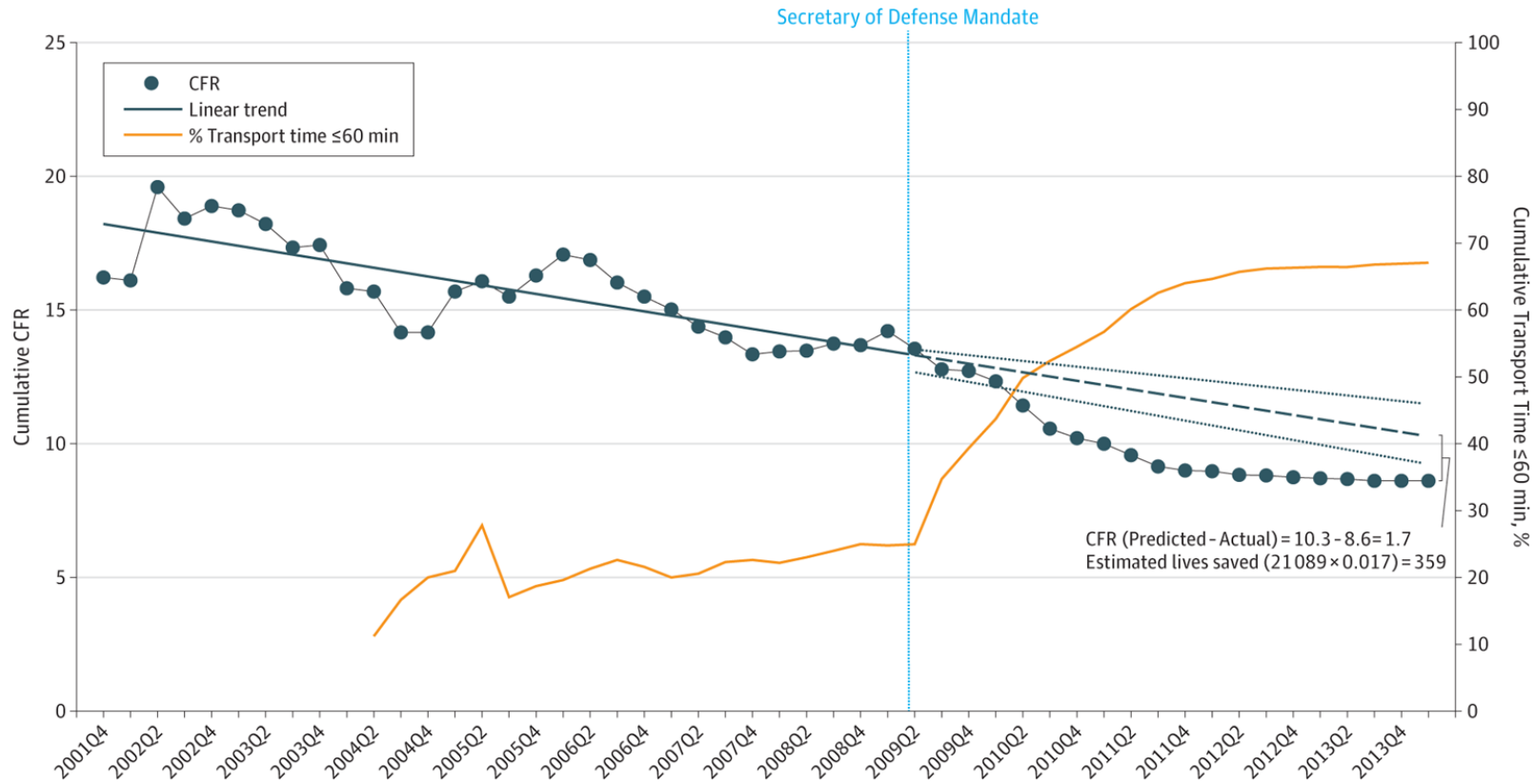
Medical Challenges in
Joint All-Domain Operations

- Highly dispersed units → low concentration of medical personnel

Focus on development of Multi-Capable Airmen (MCA) with increased TCCC skill sets at each responder level

- Multiple fronts of conflict against near-peer competitors → more casualties, insufficient MEDEVAC/CASEVAC bandwidth

Expansion of prolonged casualty care techniques, tactics, and protocols

- Denied domain superiority → delayed medical support

Expansion of prolonged casualty care techniques, tactics, and protocols

- Drawdown of major combat operations → lack of operational experience
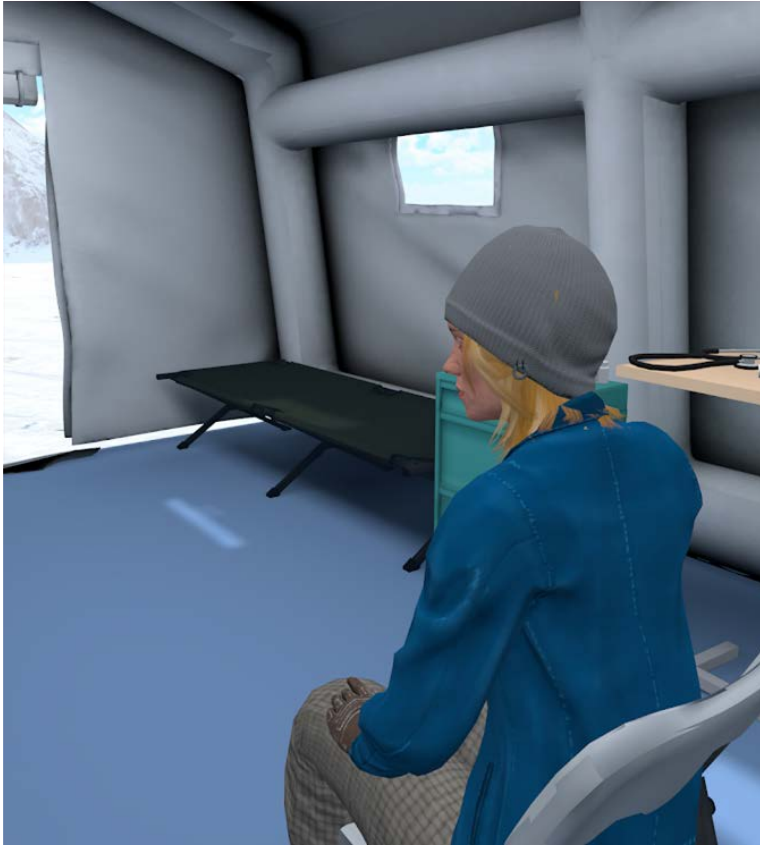
Better, smarter skills sustainment and readiness monitoring

AIR FORCE DOCTRINE NOTE 1-21

AGILE COMBAT EMPLOYMENT

U.S. AIR FORCE
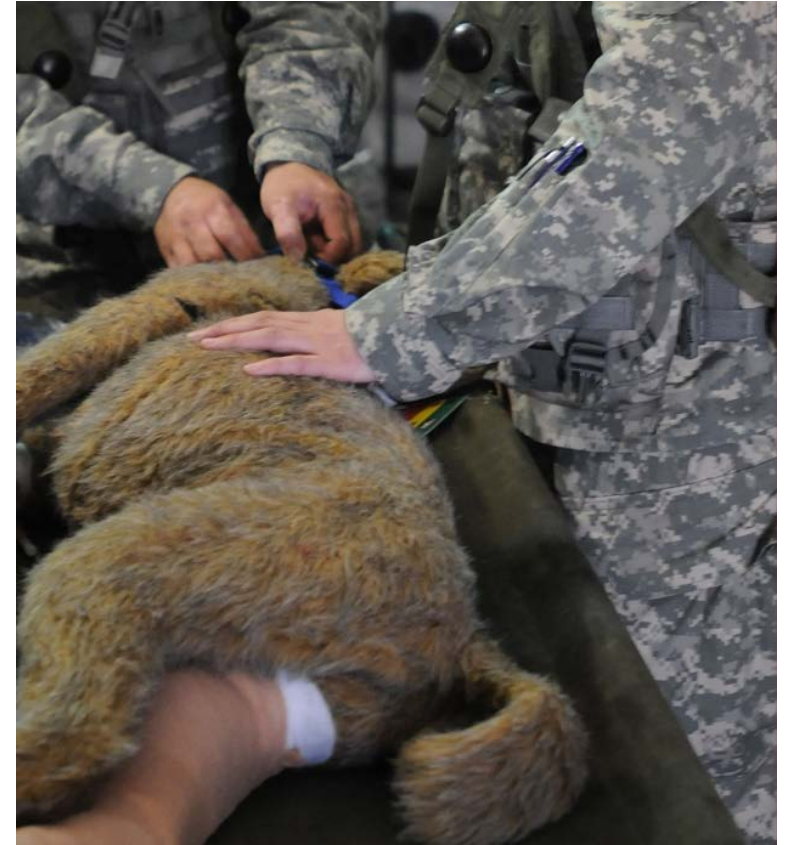
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Program Objectives

Improve Realism

Increase Flexibility

Reduce Cost

SIM X

Program Efforts To Date: >$10M in R&D Funding

CORE CAPABILITIES ($2M)

- AIO/XR2 Compatibility
- Austere / Disconnected Usability
- Battlefield Environments
- Debriefing / Tracking
- Sets, Kits and Outfits

FLEXIBILITY ($2M)

- Non-Collocated Multi-Team Training
- Dynamic Scenarios, Loadouts and Environments
- ATO Readiness
- Ease of Use
- Hand-Offs and Transitions

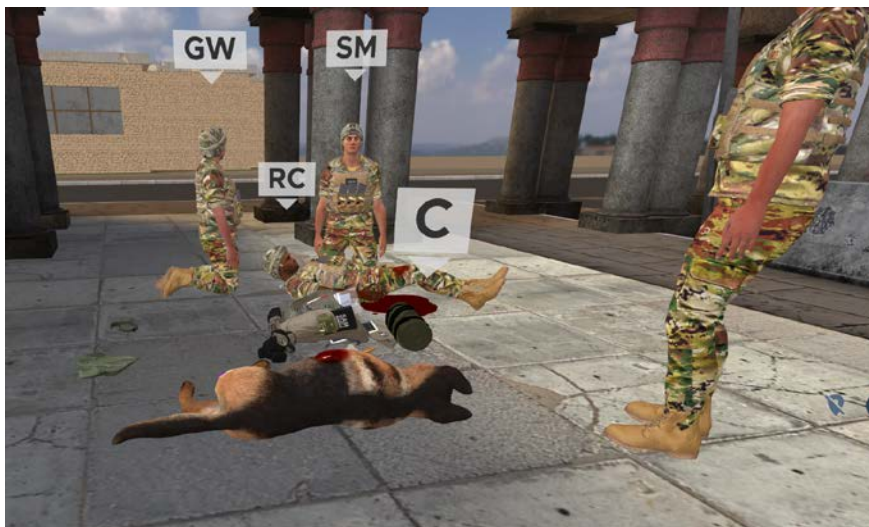## CURRICULA ($7M)

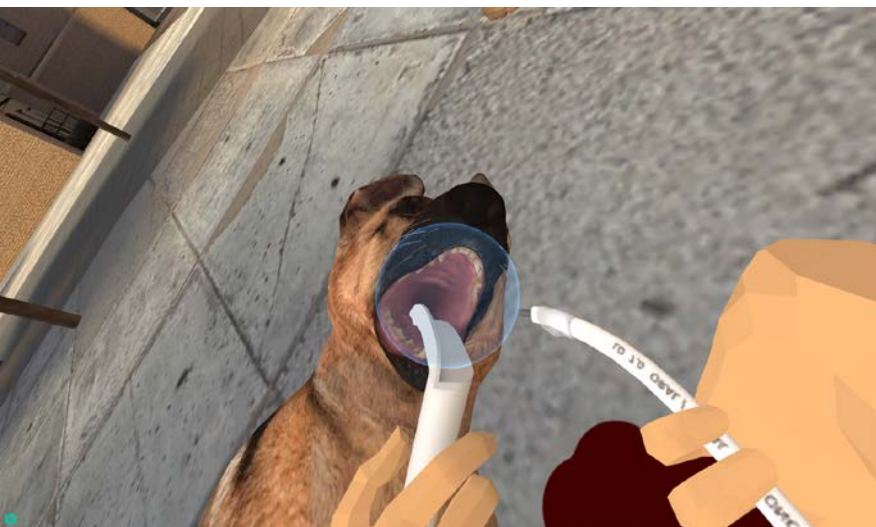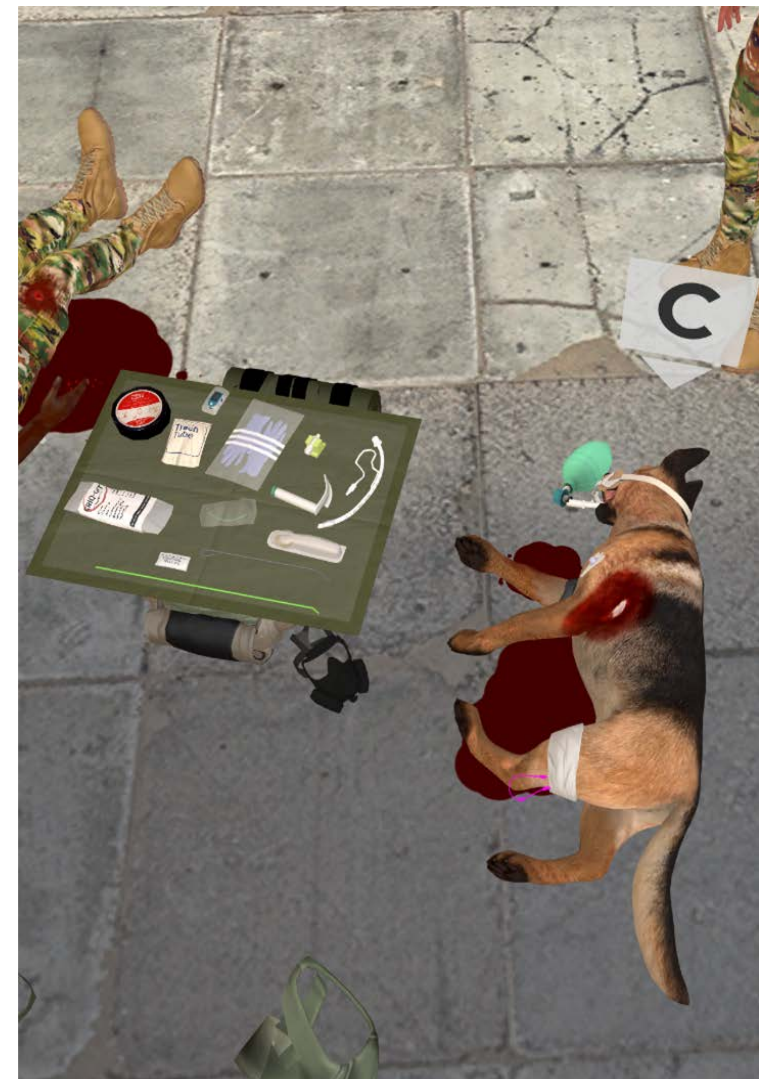- AE/CCAT
- TCCC
- C-TCCC
- ARC
- PSMCC
- CBRNE
- EMS

SimX

TCCC-Directed Simulation Training for Pararescue
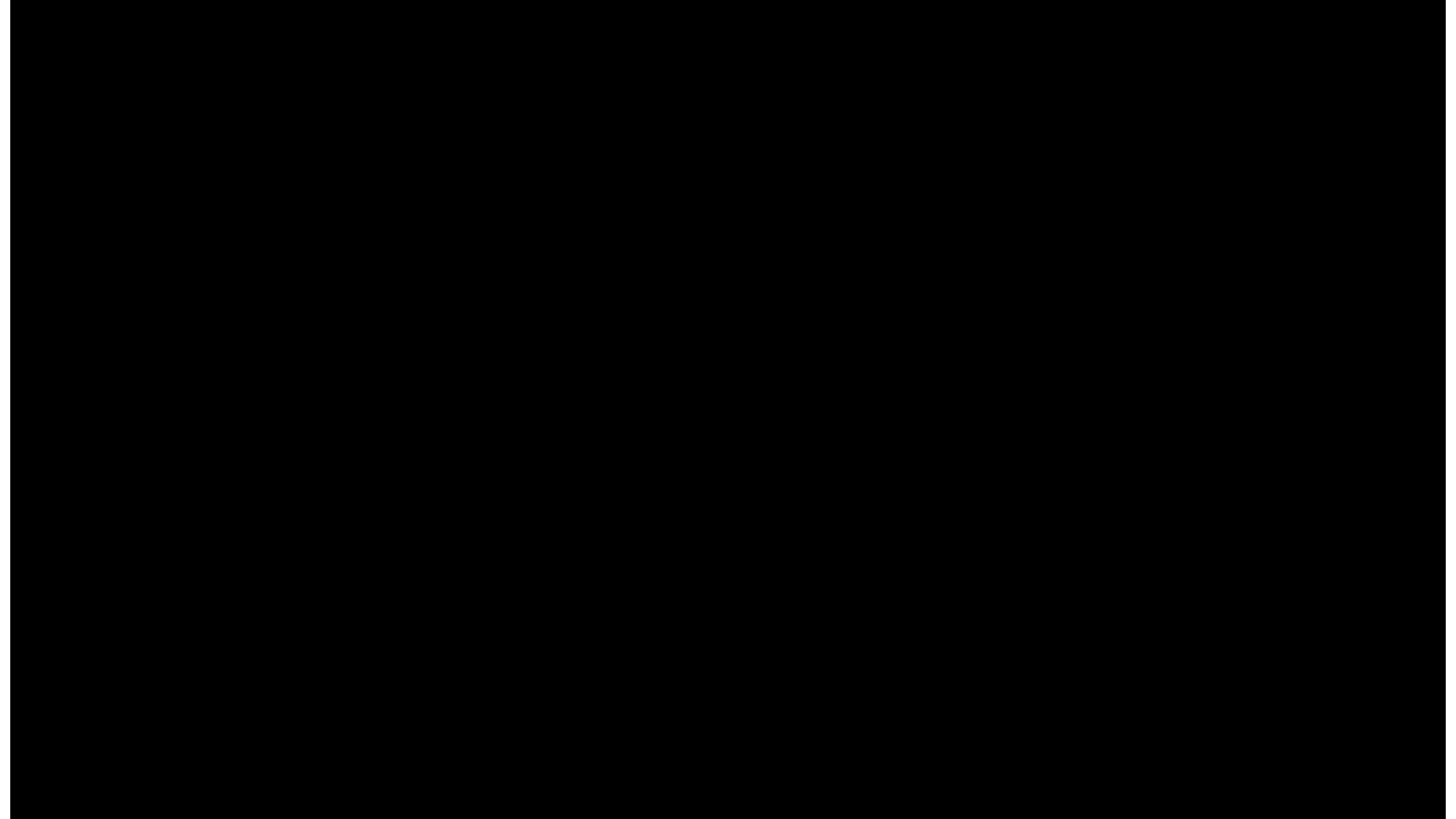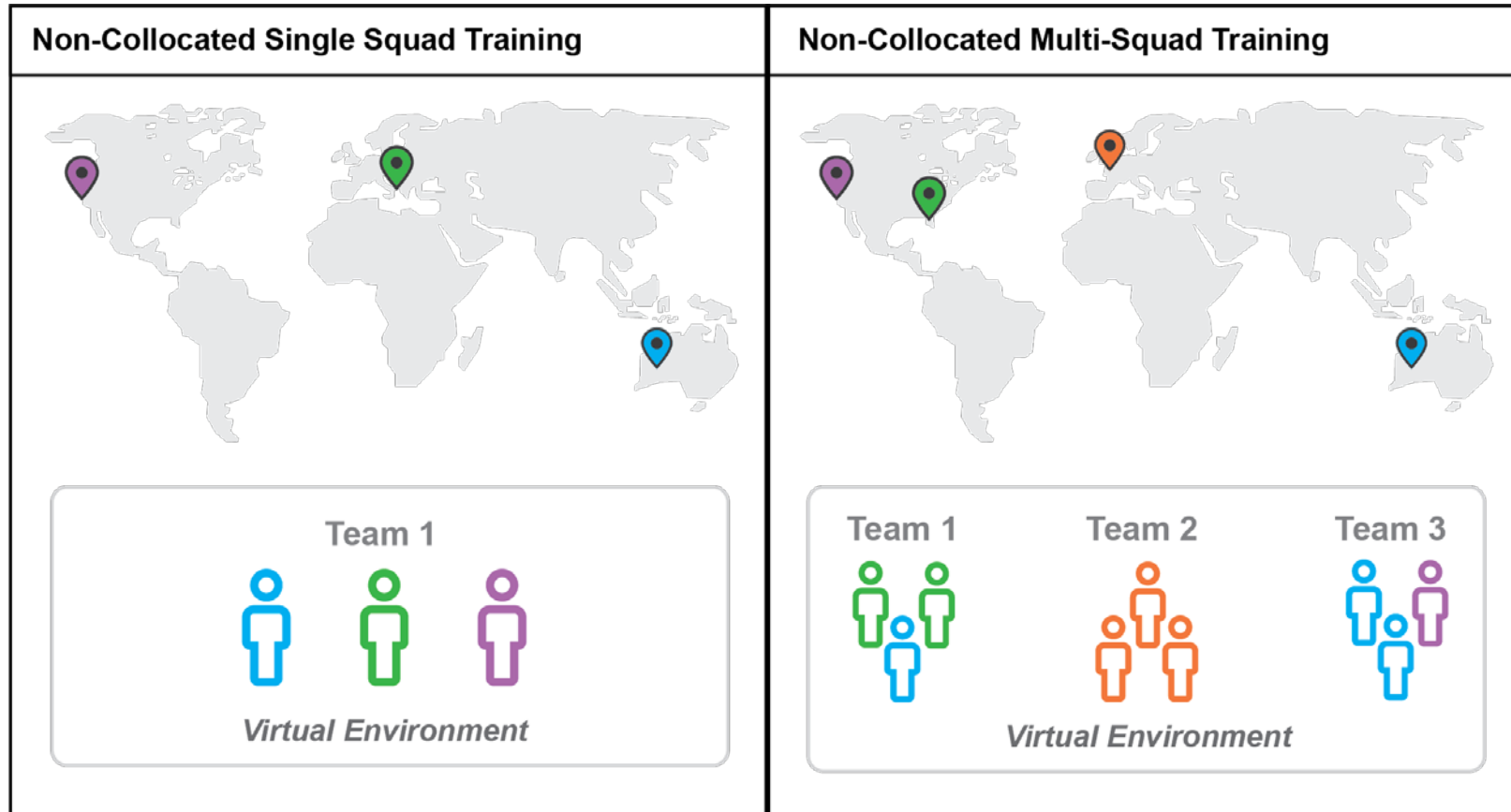
C-TCCC Directed Simulation Training

AIO VR for Enhanced Portability

Target: Fully enclosed on-premise air-gapped multiplayer operation with <15m setup

Non-Collocated Training Configurations

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Real Time Assessment & Readiness Tracking

Integration with Airman Data Analysis and Performance Tracking System (ADAPTs)

vomiting, and confusion. The trainees are expected to gather a history, perform a physical exam (including a neurologic exam) diagnose high altitude pulmonary edema with some developing cerebral edema, provide the right medications, call for transport, and place the patient in a gamow bag.

Critical Actions

State 1 - Initial Assessment

1.	Gather Appropriate History	✓	10/10 pts
2.	Take Vitals - Cardiac Leads - BP Cuff - Pulse Ox - Thermometer	✓	10/10 pts
3.	Apply O2	✗	0/5 pts
4.	Stethoscope Exam	✓	5/5 pts
5.	Cranial Nerve Exam	✗	0/5 pts

Score: 71.4%

- Completed
- Missed

3.	Required Base Camp Prompting for meds	✓	5/5 pts
4.	Explain Diagnosis to Patient	✗	0/5 pts
5.	Call for Transport	✓	10/10 pts

State 3 - Altitude Chamber

1.	Gamow Bag to 2 PSI	✓	10/10 pts
2.	Explain Gamow Bag to Patient	✓	5/5 pts

All Actions

Timestamp	Action	Performed by
State 1		
16:44:12	Case start	Moderator
16:44:36	Patient audio: I'm Hillary Climber	Moderator
16:44:49	Patient audio: I'm feeling really out of br...	Moderator

Example Cross-Role Scenario with Handoffs

A — Scene for USAF 3 Entrapment; CV-22 Helicopter here; CCP (Handoff takes place here)

B, C, D
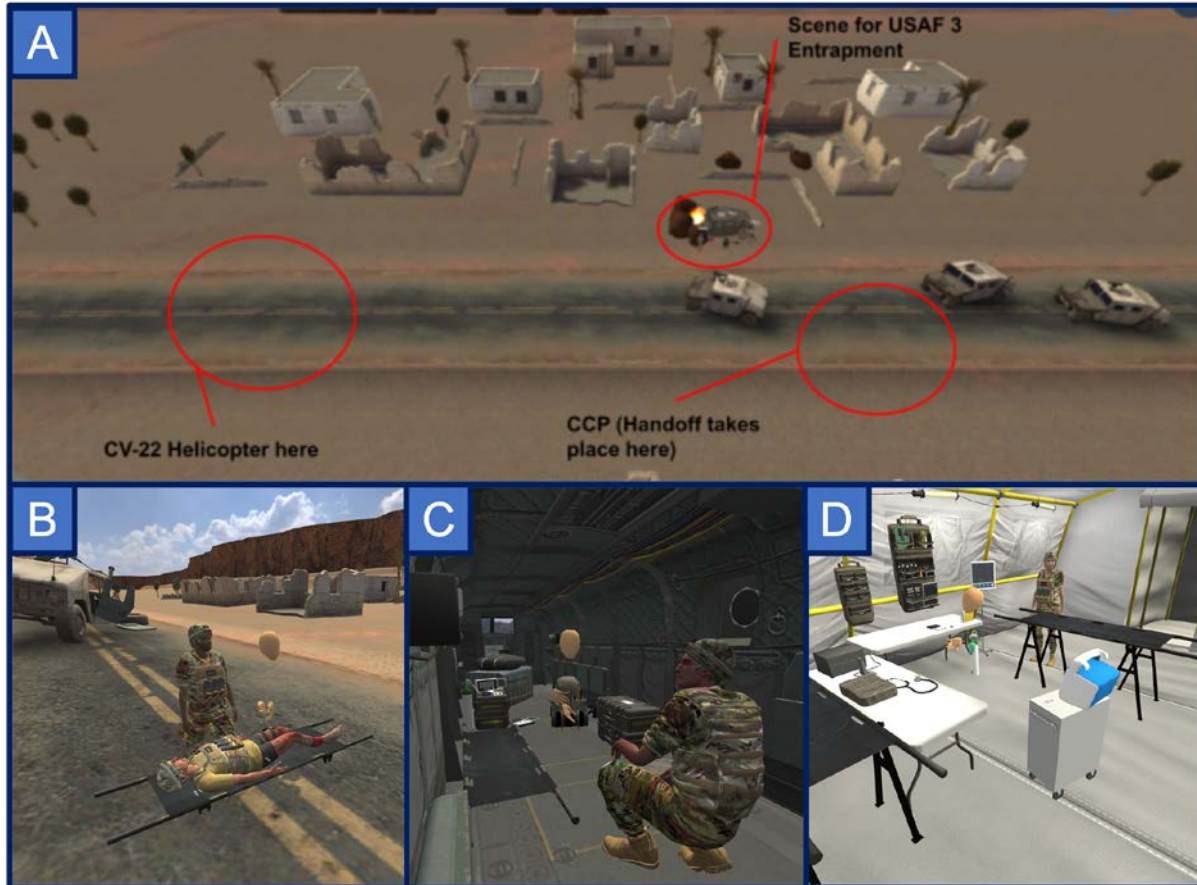
Role-Specific Objectives

Role I Team	• Establish CCP • Perform triage and trauma assessments • Communicate with En-Route personnel • Provide handoff and assist loading casualty
En-Route Team	• Provide remote medical support • Prepare platform for evacuation • Receive handoff and secure patient • Provide Role II handoff and assist offloading casualty
Role II Team	• Repeat trauma assessment • Prepare for operative or procedural intervention • Assess needs for higher level of care

MEDICAL MANAGEMENT →

MARCHE-PAWS → RAVINES, Recognize emergent complications, Manage burn/crush derangements, etc.

SIMX

Transferrable
In-Simulation Clinical Documentation

Battlefield Assisted Trauma Distributed Observation Kit (BATDOK)
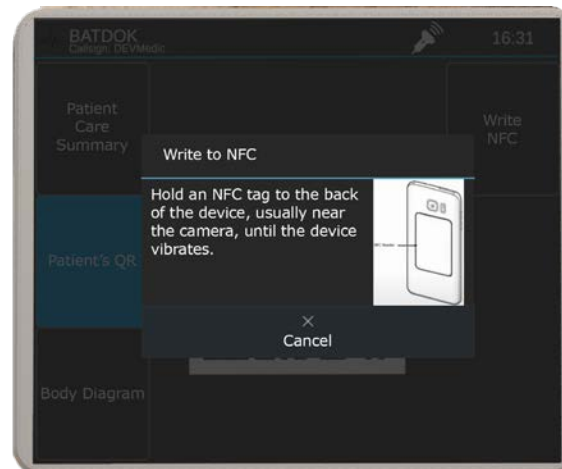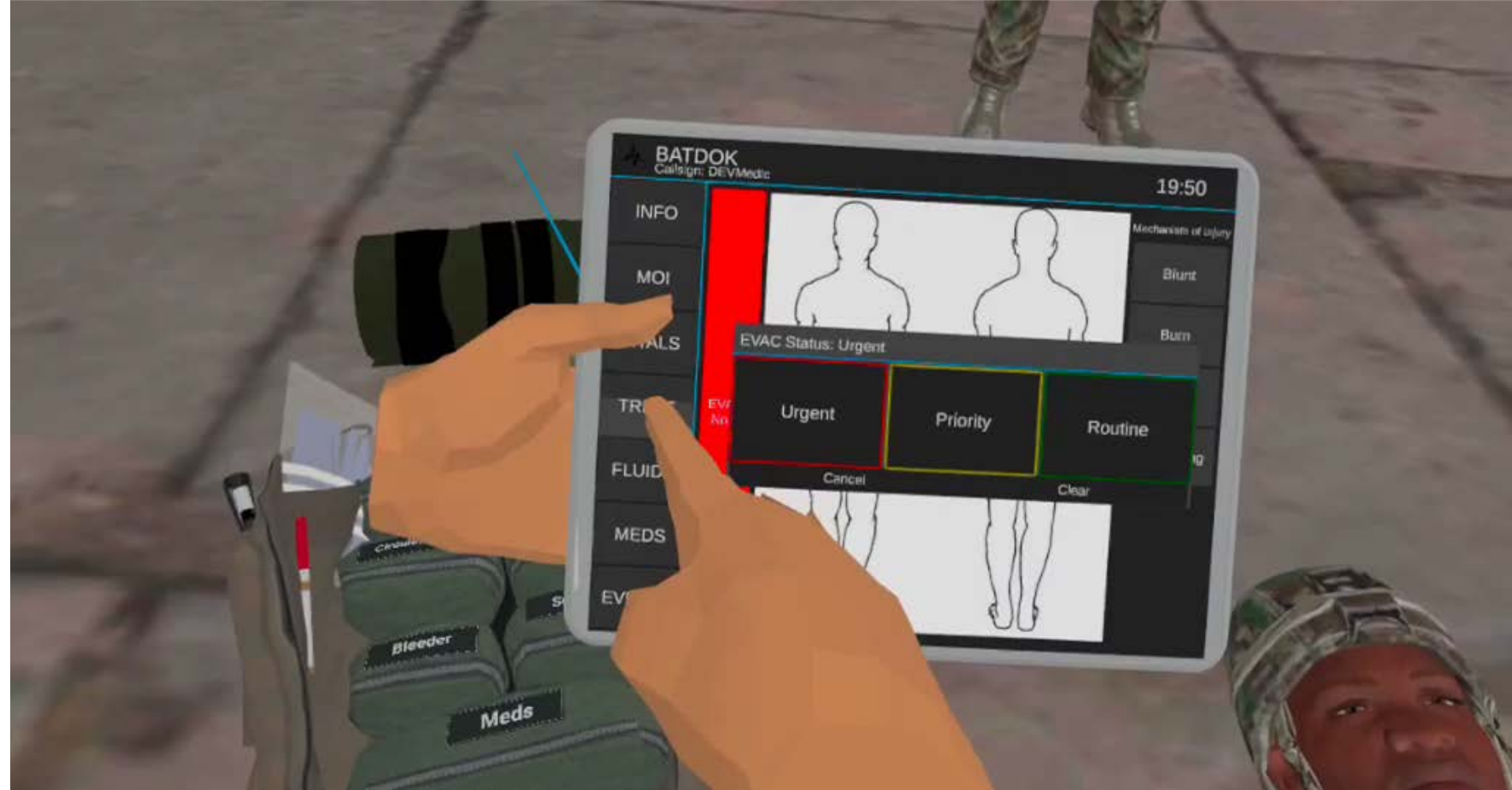
TCCC-Directed Simulation Training

VALOR CORE Scenarios (38):
TCCC, PCC, SUC, CBRN, CERT

- CBRN: Environment Safety
- CBRN: Organophosphate Toxicity
- PCC: Airway Burn
- PCC: Tanker Rescue
- PCC: Transport Pneumothorax
- PCC: Transport Trauma Transload*
- PCC: Ventilator Management*
- SUC: Anaphylaxis
- SUC: Asthma
- SUC: Back Pain
- SUC: Cellulitis vs. Abscess
- SUC: Chest Pain
- SUC: Concussion
- SUC: Corneal Abrasion*
- SUC: Lateral Canthotomy*
- SUC: Dive Medicine - Arterial Gas Embolism (AGE)
- SUC: Envenomation*
- SUC: HAPE/HACE
- SUC: Headache

- SUC: Heat Stroke
- SUC: Otitis Media*
- SUC: Pediatric Abdominal Pain
- SUC: Seizure
- TCCC: Blast Injury
- TCCC: Blunt Trauma
- TCCC: Crush Injury*
- TCCC: Dual Patient
- TCCC: Entrapment
- TCCC: Hypothermia*
- TCCC: Mass Casualty
- TCCC: Multi-Role Combat Casualty Care*
- TCCC: Multi-System Trauma Evisceration*
- TCCC: Parachuting Mishap
- TCCC: Penetrating Trauma
- TCCC: Penetrating Trauma Under Fire*
- TCCC: Severe Head Injury
- CERT: ACLS Megacode*
- CERT: PALS Megacode*

TCCC-Directed Simulation Training

Additional VALOR Curricula Scenarios (45):
C-TCCC, PSMCC, ARC, AE/ CCAT, EMS, CBRNE

- C-TCCC: Canine / Warfighter Multi-Trauma
- C-TCCC: Canine Hyperthermia
- C-TCCC: Canine Acute Head Trauma
- C-TCCC: Canine Gastric Dilatation - Volvulus
- PSMCC: Ocean Recovery
- PSMCC: Pad Abort
- PSMCC: SANS
- PSMCC: Pulmonary Embolism
- PSMCC: Orthopedic Injury
- PSMCC: Severe Burns
- PSMCC: Severe Hazardous Gas Exposure
- PSMCC: Penetrating Trauma
- PSMCC: Blunt Head Injury
- PSMCC: Death of Crew

- AE/CCAT: Blunt Trauma
- AE/CCAT: Penetrating Trauma
- AE/CCAT: Severe Head Injury
- AE/CCAT: Blast Injury
- AE/CCAT: Airway Burn
- AE/CCAT: Tanker Rescue
- AE/CCAT: MWD Mass Casualty
- AE/CCAT: Mass Casualty
- AE/CCAT: Chest Pain
- AE/CCAT: Meningitis
- ARC: Difficult Airway
- ARC: Penetrating Thoracic Injury
- ARC: Mounted Blast Injury
- ARC: Junctional Wound
- ARC: Dismounted Blast Injury

- ARC: Extremity Injury with PFC
- EMS: Congestive Heart Failure
- EMS: Combative Suicidal Intent
- EMS: Diabetic Emergency
- EMS: Drowning
- EMS: Labor and Delivery
- EMS: Pediatric Hypovolemic Shock
- EMS: Pediatric Overdose
- EMS: Respiratory Failure
- EMS: Trauma – Electrocution
- EMS: Trauma - Stabbing
- CBRNE: Military (x10 TBD)*
- CBRNE: Civilian (x5 TBD)*

DOD Current Operational Deployments

- ~24 installations currently online using TCCC curricula (including DHA, ACC and AFSOC end-users)
- Currently expanding to 58 installations